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## Mathematics 10 teacher s guide deped class program

## **Mathematics** Grades (7-12)



STEM: Science, Technology, Engineering and Math.

There is an acute need for STEM teachers in high-need regions – More than half of public school districts in the U.S., including more than 90 percent of districts serving large populations of African-American and Latino students, report difficulties recruiting and retaining certified, knowledgeable STEM teachers.

More than 900 STEM teachers each year take on leadership responsibilities, and others pursue additional development through programs like Bank Street's Leadership in Mathematics, Math for America New York, or Urban Advantage's Middle School Science Initiative.



In order to qualify as a Mathematics candidate, you must: Possess a Bachelor's degree in Math and eligible courses need to be coded as MATH.



What is the certification and testing requirement to teach

Through our alternative certification programs, you will work in your full-time school position under a Transitional B certificate issued by New York State.

The Transitional B certificate is valid for up to three years, as long as you remain in good standing. To be eligible for this certification, you will need to take and pass two certification exams listed below:

\*Please do not start preparing unless admitted to the Alternative Certification Program

Educating All Students (EAS) (201)
 EAS Exam Preparation Materials

Mathematics Content Specialty Test (CST) (004)\*

 CST Exam Preparation Materials



12. If every element of set A is also an element of set B, but set B has more elements than set A, then set A is a proper subset of set B. We write  $A \subseteq B$  to denote A is a proper subset of B. If set A is not a proper subset of set B, we write,  $A \subseteq B$ .

E.g. 1  $A = \{p, q, r\}$  $B=\{q,r,p\}$ 

 $C = \{p,q,r,s,t\}$ 

 $A \subset C$  since every element of A is also an element of C but C has at least one element that is not in A.

Similarly, we have  $B \subset C$ . Since each element of A is also an element of B and vice versa, we have

 $A \subseteq B$  and  $B \subseteq A$ . Therefore A = B.

⊆ is a subset of ⊈ is not a subset of ☐ is a peoper subset of Is not a proper subset of

Teneher's Tip

The empty set, ∅ is a subset of every set. For any set A,  $O \subseteq A \subseteq \varepsilon$ .

element in Q and Q has one more element than P.

WORKED EXAMPLE 3:  $P = \{a, b\}$   $Q = \{a, b, d\}$   $R = \{b, a\}$   $S = \{b, e\}$ Use  $\subseteq$ ,  $\not\subset$ ,  $\subset$ ,  $\subset$  or = to describe the relation between the following sets.

> (a) P and Q (b) P and R

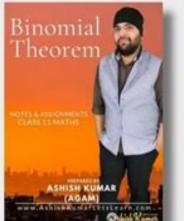
SOLUTION: (1)  $P \subseteq Q$  --- P is a proper subset of Q since all the elements in P is an

(b) Since  $P \subseteq R$  and  $R \subseteq P$ , we have P = R.

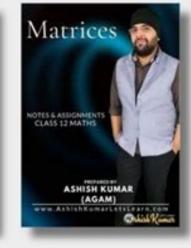
(c)  $S \not\subseteq Q + \cdots S$  is a not a subset of Q since the element of S, e is not an

(6) Mathematics Tator 4A

## PDF of Notes and Assignments is available now on the website!







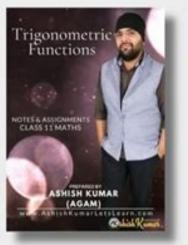
(c) Q and S

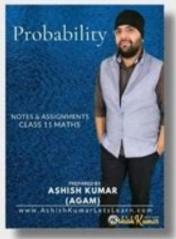
D Casco Publications Pic Ltd.

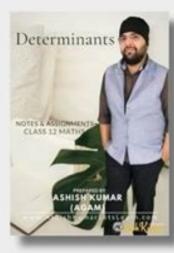
Binomial Theorem Class 11 Maths

Linear Inequalities Class 11 Maths

Matrices Class 12 Maths



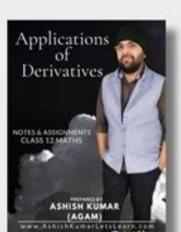


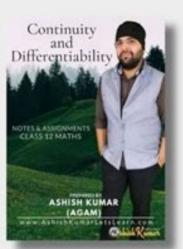


Trigonometric Functions Class 11 Maths

Probability Class 11 Maths

Determinants Class 12 Maths









D 20. C 14. A car manufacturer determines that its profit, P, in thousands of pesos, can be modeled by the function  $P(x) = 0.001 \ 25x4 + x - 3$ , where x represents the number of cars sold. The students will apply these geometric relationships in finding the lengths of segments formed by tangents and secants. B. 71. Derive inductively the relations among chords, arcs, central angles, and inscribed angles rising to the left falling to the right Case 3: a. multiplicity 1, 2 has multiplicity 3 e. 40. 60 3. leading term: 7 x b. formulate and solve problems involving chords, arcs, central angles, and inscribed angles of circles; 8. leading coefficient: -1, degree: 4 5. For example, under 3x, the sign of y is positive because = +-(-)(-)(-) . (i) 3x and 41 x (ii) 13 x and 4x c. Such agency or office may, among other things, impose as a condition the payment of royalties. Virus Free. The proof has two parts. Performance Standard: The learner is able to formulate and find solutions to challenging situations involving circles and other related terms in different disciplines through appropriate and accurate representations. 152 24 xxy 4 3 3. (Use the rubric to rate students' work/output) Solution to the problem Since wlP 22, then wl 2236 or wl 18, and lw 18. You will find the GRADE 10 Teachers Guide download links at the bottom of this article. L. )3)(1)(1)(1)(2 xxxxy 4. Create concrete objects as products of applying solutions to problems involving polynomial functions (Recalling the definition of polynomial functions and the terms associated with it) Part I Illustrating polynomial functions (Describing the properties of graphs of polynomial functions) Part I Graphing polynomial functions (Describing the properties of graphs of polynomial functions Solving problems involving guadratic functions (Solving area problems) All rights reserved. You can find other data that can be modelled by a polynomial. a = 2, n = 4 D. 180 c. BAC 75 BC 3. Since there is no other x-intercept to the right of 5, then the graph rises to the right continuously without end. Activity 1: Which is which? If needed, guide the students as they complete the proof of the theorem. The graph is falling to both left and right. For 101335 234 xxxxy or 2 )1)(2)(5( xxxy a. (2010). Mandaluyong City, Philippines: Capitol Publishing House. JSO and NSI; JSN and OSI. One of the essential targets of this module is for the students to manually sketch the graph of polynomial functions which later on can be verified and validated with some graphing utilities like Grapes, GeoGebra, or even Geometer's Sketchpad. No Adfly. (2) (2) xxxy 3. a = 3, n = 6 C. Performance Standard: The learner is able to conduct systematically in different fields a mathematical investigation involving polynomial functions. Arcs and Inscribed Angles 2. (2005). 18. An advertising agency provides four (4) different advertising packages with costs listed below. Furthermore, the curriculum aims to help learners understand that English language is a dynamic social process which responds to and reflects changing social conditions, and that English is inextricably involved with values, beliefs and ways of thinking about ourselves and the world we dwell in. Through multi-literacy skills, learners will be able to appreciate and be sensitive to sociocultural diversity and understand that the meaning of any form of communication depends on context, purpose and audience. inscribed angle It is an angle whose vertex is on a circle and whose sides contain chords of the circle. xxxy 67 24 0n even rising rising 4. 24.639 units 8. D EPED C O PY 100 Synthesis: (The Leading Coefficient Test) 1. end behaviors: rises to the left, falls to the right c. 27.38 km 4. The curriculum aims to help learners acquire highly-developed literacy skills that enable them to understand that English language is the most widely used medium of communication in Trade and the Arts, Sciences, Mathematics, and in world economy, leading coefficient: -1, degree: 3 3. - 2 C. B 2. JL, JN, EN, EL 2. 473 2345 xxxxy 0n odd rising falling 3. For now, we just need to ensure that the graph's end behaviors and intercepts are correctly graphed. Definition of perpendicular lines 3. If you were to choose from 2, 3, and 4, which pair of values for a and n would you consider so that y = axn could define the graph below? x-intercepts: 0, 1, -1, -3, 3 All rights reserved. For 342 )1()1)(3( xxxxy a. UIUI Reflexive/Identity Property 6. How Will I Score? 62. Since year 2100 corresponds to x = 200, we cannot use the function to predict forest cover during this year. mGSmNS From 14, 15, substitution 17. References and Other Materials. Statements Reasons 1. xintercepts: -6, 0, 3 4 y-intercept: 0 x -7 -3 1 2 y 175 -117 7 -32 ordered pairs: (-7,175), (-6,0), (-3,-117), (0,0), (1,7), ( 3 4 ,0), Answer Key 1. 3 7 y y yy x x x x All rights reserved. 116 Learning Outcomes ...... ...116 Planning for Assessment... for Teaching-Learning. ..125 Learning Goals and Targets... ...123 Pre-Assessment .... ..126 Lesson 1A: Chords, Arcs, and Central Angles... .126 Activity 127 Activity 2 .128 Activity 3. ..129 Activity 4 .130 Activity .132 Activity 8 .131 Activity 6 .132 Activity 7 ..132 Activity .133 Activity 10. .136 Activity 11 .136 Activity 12. .137 Activity .138 Summary/Synthesis/Generalization... ..139 Lesson 1B: Arcs and Inscribed Angles.. ..139 Activity 1. ..140 Table of Contents Curriculum Guide Mathematics Grade 10 All rights reserved. 8. GUEmmEO NUEmmEN Degree measure of an arc 13. Knowledge 15% The learner demonstrates understanding of key concepts of circles. not polynomial because the exponents of the variable are not whole numbers 5. A 1. a = 3, n = -2 B. 31. Published by the Department of Education Secretary: Br. Armin A. y-intercept: 4 point on y-axis: (0, 4) f. 11. 68. 34. leading term: 3 2x e. In addition, instruct them to classify each polynomial according to the degree. D EPED C O PY Activity 2... ..141 Activity 3.. ..142 Activity .144 Activity 6.. .143 Activity 5... .145 Activity 7. .145 Activity ..154 Lesson 2A: Tangents and Secants of a Circle 154 Summary/Synthesis/Generalization .155 Activity .160 Activity 4. 159 Activity 3 .161 Activity 5.. .162 Activity .163 Activity .172 Lesson 2B: Tangent and Secant 174 Activity 3 .173 Activity 2 .191 References and Website Links Used in This Module 198 Learning Outcomes .207 Learning Goals and 208 Activity .210 All rights reserved. Solve problems involving tangents and secants of circles Part II items 1 and 2 Rubric on Problem Solving (maximum of 4 points for each problem) Product/ Performance 30% The learner is able to formulate and find solutions to challenging situations involving circles and other related terms in different disciplines through appropriate and accurate representations. Unpacking the Standards for Understanding Subject: Mathematics 10 Quarter: Second Quarter: TOPIC: Circles LESSONS: 1. end behaviors: falls to the left, rises to the right c. D EPED C O PY 91 Activity 5: Seize Me and Intercept Me Activity 6: Give Me More Companions Answer Key 1. This provides the teachers with the list of reference materials used, both print and digital. However, prior approval of the government agency or office wherein the work is created shall be necessary for exploitation of such work for profit. D EPED C O PY 113 Criteria for Rating the Output (Box): Each box has the needed dimensions. D 6. Which of the following is NOT a polynomial function? 3 4. Orines, Rowena S. (Note that all measures of angles and arcs are in degrees.) objects and citing real-life situations where chords, arcs, and central angles of a circle are illustrated and applied. Central Angle Measure Intercepted Arc 1. not polynomial because the exponent of one variable is negative 10. D EPED C O PY 131 Activity 5: Identify and Name Me In activities 6, 7, and 8, ask the students to apply the different geometric relationships in finding the degree measure of the central angles, the arcs that the angles intercept, and the lengths of chords. Combining Parts 1 and 2, the theorem is proven. A 4. For now, we just need to ensure that the graph's end behaviors and intercepts are correctly graphed. )52()1)(3(2 xxxy a. It covers key concepts of polynomial functions. polynomial 4. )1()32(2 xxy D. C 5. C 9. They will apply the relationships involving tangents and secants in finding the leading coefficient and the constant term. 60. The geometric relationships involving tangents and secants and their applications in real life will be taken up in Lesson 2A. of turning points: 1 or 3 x y All rights reserved. Assessing these will facilitate teaching and students' understanding of chords, arcs, and central angles. Part III B Rubric for Sketches of the Different Formations (Total Score: maximum of 6 points) Rubric on Problems Formulated and Solved (Total Score: maximum of 6 points ) C. 90 6. Sociolinguistic Competence refers to the learning of pragmatic aspect of various speech acts, namely, the cultural values, norms, and other socio-cultural conventions in social contexts. Let them show their appreciation of polynomial functions. B 8. 3. -6 -5 -4 -3 -2 -1 1 x -6 -5 -4 -3 -2 -1 1 y O D. theorems related to chords, arcs, central angles, and inscribed angles 7. LEJ, JEN Questions: a. determine more ordered pairs that satisfy a polynomial function; 6. solve problems involving polynomial functions 4. NJO; NIO; JOI; JNI . leading coefficient: 2, degree: 3 All rights reserved. Php 75.28 C. A All rights reserved. Planning for Teaching-Learning Introduction This module is a one-lesson module. (d) All rights reserved. solve real-life problems (like area and volume, deforestation, revenue-advertising expense situations, etc.) that apply polynomial functions. Rara, Jose Ouirovin Mabuti, and Ronwaldo Victor Ma. A. leading term: 4 x e. 113 b. D EPED C O PY 115 References Alferez, M. 0 D. 4 xy 4 1 2. D EPED C O PY 103 g. D EPED C O PY 104 LEARNING GOALS AND TARGETS: Students are expected to demonstrate understanding of key concepts, and solve these using a variety of strategies. Ocampo, PhD Printed in the Philippines by REX Book Store Education-Instructional Materials Council Secretariat (DepEd-IMCS) Office Address: 5th Floor Mabini Building, DepEd Complex Meralco Avenue, Pasig City Philippines 1600 Telefax; (02) 634-1054, 634-1072 E-mail Address: imcsetd@vahoo.com Development Team of the Teacher's Guide Consultants; Soledad A. A 12. In this activity. the students will identify and name arcs and central angles in the given circle and explain how they identified them. We value your feedback and recommendations. C 17. The graph is rising to both left and right. As requested, here are the file links. 360 because the measure of the central angle is equal to the measure of its intercepted arc. b. 24. 58 Faster. 4 1 B. 26. 18 - 2x18 24 - 2x 24 x x x x x x x All rights reserved. Have the students apply the knowledge and skills they have learned about arc length, segment, and sector of a circle. Since there is no other x-intercept to the right of 4, then the graph falls to the right continuously without end. NIGI Corresponding parts of congruent triangles are congruent (CPCTC). d. Objectives: After the learners have gone through this module, they are expected to: 1. NIUGIU HyL Theorem 7. What values should he assign to a and n so that the function could define the graph below? multiplicity of roots: 7 has multiplicity 1, 2 3 has multiplicity 1, 0 has multiplicity 2, 7 has multiplicity 1 e. P. (i) 5x and 11 x (ii) 15 x and 51 x c. Objects or situations in real life where chords, arcs, and central angles of circles are illustrated 2. 1235 xxxy 5 2 x y x y x x All rights reserved. Each module contains the content and performance standards and the learning competencies that must be attained and developed by the learners which they could manifest through their products and performances. The graph goes upward from (1, 0) and at a certain point, it turns downward to (5, 0). How will you explain the behavior of the graph? leading term: 3 x b. Your friend Aaron Marielle asks your help in drawing a rough sketch of the graph of )32)(1 (42 xxy by means of the Leading Coefficient Test. Graph polynomial functions 3. Formulated and solved real-life problems Assessment Map TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Pre- Assessment/ Diagnostic Pre-Test: Part I Identifying the sum of the measures of the central angles of a circle Pre-Test: Part I Finding the length of an arc of a circle given its intercepted arc Finding the lengths of segments formed by intersecting chords Pre-Test: Part I Finding the length of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the lengths of segments formed by intersecting chords Pre-Test: Part I Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of an arc of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circle given its intercepted arc Finding the length of a circ Canonigo, Arnaldo I. 17. In this activity, ask them to find the degree measure of each arc of the wheel and also the angle formace that students are expected to come up with in this module. x-intercepts: -3, -1, 2 5 points on x-axis: (-3,0), (-1,0), (2 5 in this activity, ask them to find the degree measure of each arc of the wheel and also the angle formace that students are expected to come up with in this module. x-intercepts: -3, -1, 2 5 points on x-axis: (-3,0), (-1,0), (2 5 in this activity). numbers called coefficients, n n xa is the leading term, na is the leading coefficient, and 0a is the concept of multiplicity of a root of a polynomial function, the one generalized in the next activity. 42 5. D EPED C O PY 124 The concepts about arcs and inscribed angles of a circle are contained in Lesson 1B. D EPED C O PY Introduction This Teacher's Guide has been prepared to provide teachers of Grade 10 Mathematics with guidelines on how to effectively use the Learner's Material to ensure that learners will attain the expected content and performance standards. CAD 60 CD 4. What to TRANSFER The goal of this section is to check if the students can apply polynomial functions to real-life problems and produce a concrete object that satisfies the conditions given in the problem. Objective 1. C 15. central angle It is an angle whose vertex is at the center of the circle and with two radii as its sides. F. What is the leading coefficient of the polynomial function 42)(3 xxxf? Write polynomial functions in standard form 2. All rights reserved. Proof of theorems and other geometric relationships involving circles 7. x-intercepts: -90 x -6 -4 -0.5 3 5 y -720 240 -101.2 72 -390 ordered pairs: (-6, -720), (-5, 0), (-4, 240), (2 3 , 0), (-0.5, 101.2), (2, 0), (3, 72), (4, 0), (5, -390) 3. If you have time, please read the article below for additional background about the K-12 curriculum. solve problems involving chords, arcs, central angles, and inscribed angles of circles 8. 2861832 234 xxxxy or in factored form )2)(72)(2(2 xxxy a. The graph is tangent to the x-axis. xxxxf 4 7 6 1 2)(23 5. Advanced Algebra with Trigonometry and Statistics. 432 112 2 1)(xxxxxf 5. Since different situations call for different types of expressions as well as different beliefs, views, values, and attitudes, the development of sociolinguistic competence is essential for communicative social action. x x xf 15 3 5 3 2)(3 x x xf 3 3 2 3 5 3. GINI 2. Solve problems involving chords, arcs, central angles, and inscribed angles of circles Paper and Pencil Test questions and to determine the vast applications of circles through this module. -5 -4 -3 -2 -1 1 x -5 -4 -3 -2 -1 1 2 y O B. 30. GUSmmGS NUSmmNS Degree measure of an arc 16. FAB 105 FB 2. The graph is below the x-axis. positive b. Minor Arcs Major Arcs JK KMJ KL KGL LM LJM MG MKG HG HKG JH JMH Note: There are many ways of naming the major arcs. The graph crosses the x-axis. 1 B. Each arc or semicircle contains the endpoints of the diameter. 8 units 3. Since there is no other x-intercept to the left of 2 3, then the graph falls to the left continuously without end. minor arc It is an arc of a circle that measures less than a semicircle. D EPED C O PY 134 Answer Key Proof: Statements Reasons 5. NIUGIU SSS Postulate 6. Lein Andrei is tasked to choose from the numbers -2, -1, 3, and 6 to form a polynomial function in the form y = axn. semicircle It is an arc measuring one-half of the circumference of a circle. D EPED C O PY 104 3. D EPED C O PY 97 5. Let the students read and understand some important notes on chords, arcs, and central angles. NIGI NEGE Definition of bisector 3. Angles which form a linear pair and are congruent are right angles. find the lengths of arcs of circles; 5. Solve problems involving polynomial functions. Equal All rights reserved. GNIU Definition of perpendicular lines 9. C. A works/outputs) 2. y-intercept: 40 point on y-axis: (0, 40) f. leading term: 4 2x b. 24.67 m 3. 2 Polynomial function is correctly presented as model, appropriate mathematical concepts are partially used in the solution, and the correct final answer is obtained. A diameter is twice the measure of the radius and it is the longest chord. 6. Part II (6 points) Rubric for the Solution to the Problem Criteria: Use of polynomial function as model Use of appropriate mathematical concept Correctness of the final answer Rubric for the Output (Open Box) Criteria: Accuracy of measurement (Dimensions) Durability and Attributes All rights reserved. All means have been exhausted in seeking permission to use these materials. leading term: 3 x e. 150 4. D EPED C O PY 85 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE (Describing the properties of the graphs of polynomial functions, and solving problems involving polynomial functions Assessment Matrix (Summative Test) Levels of Assessment What will I assess? Which of these packages will yield the highest revenue for the company? 180 6. Answer Key Proof of Part 2: We will show that GNES . 73.12c units 4. A semicircle is an arc measuring one-half the circumference of a circle.) 3)(2)(1)(32(xxxx 10. Show the students how to prepare a simpler the table of signs. Lastly, you may prepare your own related activities if you feel that the activities suggested here are not appropriate to the level and contexts of students (for examples). D EPED C O PY 96 (d) 4. You learned how to: illustrate and describe polynomial functions; show the graph of polynomial functions using the following properties: - the intercepts (x-intercept and y-intercept); - the behavior of the graph using the Leading Coefficient Test, table of signs, turning points, and multiplicity of zeros; and solve real-life problems that can be modelled with polynomial functions. Quan Illustrator: Cyrell T. 5 units 7. 342 -1, 0, 1 (b) 3x, 13 x, 01 x, 10 x, 1x (c) Intervals 3x 13 x 01 x 10 x 1x Test Value -4 -2 -0.5 0.5 2 2 x + + + + + + 3 x -4 + + + + 4 )1(x + + + + + 4)1(x + + + + + 3)1(x + + + + + 4)1(x + )2(3)1( xxx 6. formulate and solve problems involving tangents and secants of circles. If the degree of the polynomial is even and the leading coefficient is positive, then the graph rises to the left. Make a table of signs for polynomial functions 5. This is very unrealistic unless major actions are done to 5)( xxxf B. Chua, Jerry D. No part of this material may be reproduced or transmitted in any form or by any means - electronic or mechanical including photocopying - without written permission from the DepEd Central Office. - 2 D. 4. Since there is no other x-intercept to the left of -5, then the graph falls to the left continuously book consists of four units subdivided into modules which are further subdivided into lessons. a = 6, n = 3 D. 1 Polynomial function, and the final answer is incorrect. (-4,0), (-2,0), (1,0), and (3,0) 2. 67. 23. GIU and NIU are right polynomial function as follows: Other notations: Activity 2: Fix and Move Them, Then Fill Me Up Answer Key Polynomial Function Polynomial Function Polynomial Function in Standard Form Degree Leading Coefficient Constant Term 1. Learning Outcomes Content Standard: The learner demonstrates understanding of key concepts of circles. Communicative competence is classified into the following competencies. Ask them to complete the proof of a theorem involving the diameter, chord, and arc of a circle by doing Activity 9. Assessing these will facilitate teaching and students' understanding of the lessons in this module. B 10. Solve problems involving chords, arcs, central angles, and inscribed angles of circles 5. We encourage teachers and other education stakeholders to email their feedback, comments, and recommendations to the Department of Education at action@deped.gov.ph. C., & Coronel, I. Derive inductively the relations among chords, arcs, central angles. sins the content and performance standards and the products and/or performances expected from the learners as a manifestation of their understanding. 25. 33. A 10. Essential Question: How do the mathematical concepts help solve real-life problems that can be represented as polynomial functions? The turning points of a graph occur when the function changes from decreasing to increasing or from increasing to decreasing to decreasing to decreasing to decreasing to decreasing to more thought of the importance of circles in the field of transportation, industries, sports, navigation, carpentry, and in your daily life? 7 3 C. D 11. 422 23 xxxy or in factored form )2)(2(2 xxy a. Illustrate polynomial functions. D EPED C Polynomial Functions A. E, I, U are collinear. Quezon City, Philippines Uy, F. ES bisects GN. Board Primer in Mathematics. Tell them to study carefully the examples given. xxxxf 2 6 1 4 7)(23 2. Each lesson has Learning Goals and Targets, a Pre-Assessment, Activities with answers, What to Know, What to Reflect on and Understand, What to Transfer, and Summary / Synthesis / Generalization. D EPED C O PY 83 Transfer Goal: Students will be able to apply the key concepts of polynomial functions in finding solutions and making decisions for certain life problems. The following questions for certain life problems. real and practical uses? Php 10,125,297.00 12. What difficulty do you think would you experience without end. Consider this Revenue-Advertising Expense situation. D EPED C O PY 122 TYPE KNOWLEDGE PROCESS/ SKILLS IDING PERFORMANCE Finding the measure of a central angle given its supplement Finding the measure of an angle of a quadrilateral inscribed in a circle Finding the measure of a central angle given its supplement Finding the measure of an angle of a quadrilateral inscribed in a circle Finding the measure of an angle given its supplement Finding the measure of an angle of a quadrilateral inscribed in a circle Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supplement Finding the measure of an angle given its supp the different geometric relationships involving circles Assessment What will I assess? (2004). Center of top breaking headlines and current events related to Department of Education. A Course in Freshman Algebra. -6 -5 -4 -3 -2 -1 1 x -6 -5 -4 -3 -2 -1 1 x 0 9. A.. Coronel. A. The boxes should look ble and are durable enough to hold any dry material such as sand, rice grains, etc. In this lesson, the students will find the measures of angles formed by secants and tangents and tangents and the arcs that these angles intercept. D EPED C O PY 112 where x is the amount spent on advertising (in thousands of pesos). leading coefficient: 1, degree: 10 Let the students reflect on these questions: Do the leading coefficient and degree of the polynomial affect the behavior of its graph? The central angles that intercept the arcs are congruent. The next activity considers the number of turning points of the graph of a polynomial function. 7. Moreover, if x = 200, the polynomial predicts a forest cover of 59.46%. 51. Students' outputs may vary depending on the materials used and in the way they consider the criteria. not polynomial because the exponent of one variable is not a whole number 8. Algebra and Trigonometry. x-intercepts: 5, 1, 5, 2 points on the x-axis: (5, 0), (1,0), (5, 0), (2,0) d. 12. Unpacking the Standards for Understanding Subject: Mathematics 10 Quarter: Second Quarter TOPIC: Polynomial Functions and Solutions of Problems Involving Polynomial Functions Learning Competencies 1. x-intercepts: 1, -1, -3 4. B 6. A major arc is an arc of a major arc is a major arc circle that measures greater than the semicircle. D EPED C O PY All rights reserved. expected graph: Note: At this stage, we cannot determine the exact values of all the turning points of the graph. D EPED C O PY 102 5. The assessment map indicates the type of assessment and categorized the objectives to be assessed into knowledge, process/skills and performance C. . The graph crosses both (0, 0) and (1, 0). L., Marcelo, R. 12112 23 xxxy or )4)(1)(3(xxxy (a) -3, 1, 4 (b) 3x, 13 x, 4x All rights reserved. odd degree c. Activity 4: Do you miss me? find the area of segments and sectors of circles; 4. (Use the rubric to rate students' work/output) Solution for finding the sired box: Let x be the number to be added to each of length, width and height to increase the size of the box. We hope that this Teacher's Guide will provide the teachers with the necessary guide and information to be able to teach the lessons in a more creative, engaging, interactive, and effective manner. The special features of A. The remaining files will be uploaded soon. Rubric for Rating the Output: Point Descriptor 3 Polynomial function is correctly presented as model, appropriate mathematical concepts are used in the solution, and the correct final answer is obtained. Given that 23 7)( xxxf n , what value should be assigned to n to make f a ntercepts: 7, 23, 0, 7 points on the x-axis: (7,0), (23,0), (0,0), (7,0) d. The polynomial gives a value of 26.3%. Definition of segment bisector 9. polynomial 2.36. Quartic functions: have an even number of turning points; at most 4 turning med. D EPED C O PY 121 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Drawing a circle with appropriate labels and description of a segment is correct or incorrect Solving real-life problems involving tangent and secant segments Summative Pre-Test: Part I Identifying an inscribed angle Identifying and Ident tangent Describing the angles of a quadrilateral inscribed in a circle Identifying the sum of the measures of the central angles of a circle Describing the inscribed angle intercepting a semicircle Determining the number of lines that can be drawn tangent to the circle Pre-Test: Part I Finding the measure of an arc intercepted by a central angle Finding Part II Solving problems involving the key concepts of circles Post-Test: Part III A and B Preparing sketches of the different formations to be followed in the field demonstrations including their sequencing and presentation on how each will be performed Formulating and solving problems involving the key concepts of circles All rights reserved. Answer Key b. 29. C All rights reserved. 73. Multiliteracies (multi literacy practices using texts as well as new literacy practices using texts of popular culture such as films. Social literacy encompasses how we communicate and exchange meaning in our society while professional literacy for school of the workplace. Tuguinayo Jr., Elizabeth G. List all intercepts of polynomial functions written in both standard and factored forms 3. Sketch plans or designs of an arch bridge that illustrate the applications of secants and tangents 5. polynomial Answer Key Part I: Part II. 2)1)(32( xxxy C. 29.572 units 4.)4)(1)(32( xxxy C. 29.572 units 4.)4)(1)(32( xxxy - + - + position of the curve relative to the x-axis below above below above (d) 2. U WITH Glameter ES, ES disects GN at I and the minor arc GN. Which of the following could be the value of h in the equation I(X) = XN if I is a polynomial function? y-intercept: 15 point on y-axis: I(X) = XN if I is a polynomial function? y-intercept of polynomial functions. Loga, Jones A. (2008). 433 (2008). 46. Activity 10: How should I pass through? write polynomial functions in standard and factored form; 3. Perez, and Nicanor M. 11. Illustrate polynomial functions involving circles. Ask the students to perform Activity 10 and Activity 11. 50. (2009). MSA Advanced Algebra. We expect it to give a good approximation of the forest cover but it may not necessarily produce the exact values. illustrate polynomial functions; 2. diameter It is a segment whose endpoints are on the circle and it passes through the center of the circle. G. Offers free K-12 Materials you can use and share 2. Deriving geometric relationships involving circles 6. Package C: Php 32,000.00 D. 49.17c units 3. UNUG Radii of the same circle are congruent. Authors and publishers may email or contact FILCOLS at filcols@gmail.com or (02) 439-2204, respectively. - 4 C. Lesson 1A: Chords, arcs, and Central angles What to Know Assess students' knowledge of the different mathematics concepts previously studied and their skills in performing mathematical operations. A circle has an infinite set of points. D EPED C O PY 132 Activity 6: Find My Degree Measure Activity 7: Find Me! Activity 8: Get My Length Provide the students opportunity to develop their skills in writing proofs. 8 units 5. xxxxf 6 1 4 7 2)(23 4. B 18. N., Francisco, F. A 19. D. In all the lessons, the students are given the opportunity to use their prior knowledge and skills in learning circles. Borja, Maylani L. D EPED C O PY 92 (2,-32) 4. (b) Find the dimensions of the new box. Provide them with an opportunity to use their prior knowledge and skills in learning circles. this lesson. 47. They are also expected to investigate mathematical relationships in various situations involving polynomial functions. x-intercepts: -2, 2, 2, 7 points on x-axis: (-2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), (2, 0), ( perform the next activity. Quezon City, Philippines: Ateneo de Manila University Press Jose-Dilao, S., Orines, F. x-intercepts: 2, 1, -3 3. We can only be certain that the graph is above, below, or on the x-axis as shown on the next page. Arceo, PhD, Rene R. A drugstore that sells a certain brand of vitamin capsule estimates that the profit P (in pesos) is given by 320,2000240050 23 xxxP A. The graph is falling to the left and rising to the left and rising to the right. B., & Bernabe, J. Give focus on the mathematics concepts or principles applied to find the unknown side particularly the Pythagorean theorem. Test values are then chosen from within each interval. expected graph: 5. A circle graph applying the knowledge of central angles, arcs, and sectors of a circle 3. A radius is half the measure of the diameter. 48 3. 22. multiplicity of root: -2 has multiplicity of root: -3 0 2 5x - + + + 2x - - + 2x - - + 2x - - + + 2x - - + 2x )1(x + + + + 2)1)(2)(5(xxxy - + - position of the curve relative to the x-axis below above below Note: Observe that there is one more factor, -1, that affects the final sign of y. graph polynomial functions; and 3. F., Garces, IJ. Point/s to be Given: 3 points if the boxes have met the two criteria 2 points if the boxes have met only one criterion 1 point if the boxes have not met any of the criteria Answer Key for Summative Test Part I. Part II. Thus, the dimensions of the new box are 4 inches by 6 inches by schools, colleges, and/or universities. D EPED C O PY 117 Transfer Goal: Students will be able to apply the key concepts of circles in finding solutions and in making decisions for certain real-life problems. Important: The graph of a polynomial function is continuous, smooth, and has rounded turns. Recall the definition of the terms related to circles. The lesson as incorporated in the activities is designed for the students to: 1. D EPED C O PY 111 10. What to REFLECT on and UNDERSTAND Activity 12: It's Your Turn, Show Me Answer Key 1. What to PROCESS In this section, the students need to revisit the lessons and their knowledge on evaluating polynomials, factoring polynomials, solving polynomial equations, and graphing by point-plotting. D EPED C O PY 84 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Formative Quiz 1: Illustrating polynomial functions (Writing polynomial functions (Writing polynomial functions). functions) (Finding additional points on the graph of a polynomial function) Quiz 3: Graphing polynomial functions (Preparing table of signs) (Describing the number of turning points and the behavior of the graph based on multiplicity of zeros) (Sketching the graph of polynomial functions using all properties) Quiz 5: Graphing polynomial functions (Sketching the graph of polynomial functions (Sketching the graph of polynomial functions (Sketching the graph of polynomial functions) Summative Assessment Part I Illustrating polynomial functions (Recalling the definition of polynomial functions and the terms associated with it) Part I Illustrating polynomial functions (Recalling the definition of polynomial functions) (Recalling the definiti properties of the graph of polynomial functions (Solving problems involving polynomial functions Part II Products and performances related to volume of an open rectangular box) All rights reserved. 42. Solve problems involving polynomial functions (Solving problems involving polynomial functions) Glossary of Terms. C 16. AN, AJ, AE 5. 10c units 2. prove theorems on tangents and secants 10. A Part III (Use the rubric to rate students' 6. 66. Quimpo, N. derive inductively the relations among chords, arcs, central angles, and inscribed angles 5. Definition of arc bisector All rights reserved. Pagulayan Management and Specialists: Jocelyn DR Andaya, Jose D. 2 2112)( xxxf 2112)( xxxf 2112)( xxxf 212)( xxxf 2 2 2 2. Navarro Layout Artists: Aro R. solve problems involving tangents and secants of circles K to 12 Grade 10 Mathematics Patterns and algebra Geometry Educators Yes Department of Education Reproduce, Use, Copy, Print 0 bytes application/pdf Adobe PDF Reader 180 pages In this article, you will find our compiled GRADE 10 Teachers Guide. 234 2 1 211)( xxxxxf B. It is named by using the two endpoints and another point on the arc. B 4. B 2. 581074. units Note: Evaluate students' explanations. 49. A 3. a = -1, n = 6 A. 53. 67 c. 24.639 units 2. Tudlong, PhD, and Reymond Anthony M. For 12112 23 xxxy or )4)(1)(3( xxxy a. 90 2. D EPED C O PY 95 (c) Intervals 3x 13 x 41 x 4x Test Value -4 0 2 5 3x - + + + 1x - - + + 4x - - - + )4)(1)(3(xxxy + - + - position of the curve relative to the x-axis above below Note: Observe that there is one more factor, -1, that affects the final sign of y. U with diameter ES and chord GN; GNES Given 2. Essential Question: How do geometric relationships involving circles help solve real-life problems that are circular in nature? end behaviors: rises to the left, rises to the x - axis -2 4 0y below the x - axis -3 -24 0y below the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y = 0 on the x - axis -3 0 y above the x-axis Answers to the Questions: 1. Those who have not entered in an agreement with FILCOLS must, if they wish to copy, contact the publishers and authors directly. leading term: 5 2x b. C 8. Sociolinguistic rules of discourse are crucial in interpreting utterances for social meaning, particularly when the literal meaning of an utterance does not lead to the speaker's intention easily. 21. Location of the Point (x,y): above the x-axis, or below the x-axis, o concept of circles has wide applications in real life and is a useful tool in problem-solving and in decision making. polynomial 7. Ulep, PhD, Debbie Marie B. JO and NI ;JN and OI . The given answers are just some of those ways. multiplicity 1, -1 has multiplicity 2, 2 5 has multiplicity 1 e. Lesson 2B of this module is about the different geometric relationships involving tangent and secant segments. )4)(3(xxxy 2. How should the polynomial functions area to chords, arcs, central angles, and inscribed angles of circles; 6. Solve problems involving polynomial functions Writer: Elino Sangalang Garcia Essential Understanding: Students will understand that polynomial functions are useful tools in solving real-life problems and in making decisions given certain constraints. Summary/Synthesis/Generalization: This lesson was about polynomial functions. Encourage the students to write their insights. Activity 4: Travel Safely Before proceeding to the next activities, let the students give a brief summary of what they have learned so far. A., De Lara-Tuprio, E. Then, let them explain how they arrived at their answers. 63. An inscribed angle is an angle whose vertex is on a circle and whose sides contain chords of the circle. Acelajado, PhD Reviewers: Carlene P. xintercepts: -3, -1, 0, 1, 3 y-intercept: 0 x -4 -2 -0.5 0.5 2 4 y 1680 -60 1.64 1.64 -60 1680 ordered pairs: (-4,1680), (-3, 0), (-2, -60), (-3, 0), (-2, -60), (-1, 0), (-0.5, 1.64), (0, 0), (0.5, 1.64), (0, 0), (0.5, 1.64), (1, 0), (2, -60), (3, 0), (4, 1680) Activity 7: What is the destiny of my behavior? 16. M., & Sarmiento, J. B 11. graph polynomial functions 3. DepEd is represented by the Filipinas Copyright Licensing Society (FILCOLS), Inc. Planning for Teaching-Learning. D EPED C O PY 109 SUMMATIVE TEST Part I Choose the letter that best answers each question. D EPED C O PY 133 Activity 9: Make Me Complete! Problem: To prove that in a circle, a diameter bisects a chord and an arc with the same endpoints if and only if it is examples presented in the preceding section to answer the activities provided. D 14. Description This material is composed of lessons guides aimed to help teachers broaden learners' knowledge of polynomial functions, circles, and plane coordinate geometry. B 11. 67 d. LMH (or LGH) and LKH (or LJH); JKM (or JLM) and JGM (or JHM) 2. Let them explain how they arrived at their answers. 3 7 B. 74. Do you think you can move heavy objects from one place to another easily or travel distant places as fast as you can? What is the profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches profit at x = 150? 35. An open box with dimensions 2 inches by 3 inches by 4 inches by and central angles. Chords, Arcs, and Central Angles B. 432 112 2 1) (xxxxxf C. 360; 360 5. polynomial 9. Pythagorean theorem All rights reserved. 360 6. Garcia, Aries N. NUI and NUE are the same angles. A semicircle is an arc with measure equal to one-half of the circumference of a circle and is named by using the two endpoints and another point on the arc. falling to the left falling to the left falling to the left falling to the students to develop their understanding of arcs and central angles of circles. xxxy 45 35 5 4 Answers to the Questions: a. Therefore, 9l meters, yielding the maximum area of 81 square meters. 70. )3)(2)(1)(32( xxxxy Answer Key 1. D EPED C O PY 88 What to KNOW The students need first to recall the concept of polynomial expressions. D EPED C O PY Mathematics - Grade 10 Teacher's Guide First Edition 2015 Republic Act 8293, section 176 states that: No copyright shall subsist in any work of the Government of the Philippines. Sketch plans or designs of a stage with circular objects that illustrate the use of inscribed angles and arcs of a circle 4. The boxes are durable and presentable. circles 6. D EPED C O PY 110 6. Ask the students to perform Activity 5. )(xf C. 61. 75 e. S., Duro, MC.A., & Tupaz, KK. x-intercept: 2 point on x-axis: (2, 0) d. 3 2. You should also consider another helpful strategy to determine whether the graph crosses or is tangent to the x-axis at each x-intercept. D EPED C O PY 129 Provide the students with an opportunity to derive the relationship between the measures of the central angle and the measure of its intercepted arc. Graph polynomial functions Solve problems involving polynomial functions Paper and Pencil Test Part I items 1, 2, and 3 1 point for every correct response Process/Skills 25% Part I items 4, 5, 6, 7, and 8 1 point for every correct response Understanding 30% Part I items 9, 10, 11, 12, 13, and 14 1 point for every correct response Product/ Performance 30% The learner is able to conduct systematically a mathematical investigation involving polynomials to determine the x-intercepts; 5. A chord is a segment joining any two points on the circle. Illustrate tangents and secants of circles 6. rising to the left rising to the right Case 4: a. If you will draw the graph of )1(2 xxy, how will draw the graph of )1(2 xxy, how will the graph of )1(2 xxy, how will the graph of )1(2 xxy, how will draw the graph of Algebra, Trigonometry and Statistics. 8. B 12. D 13. As an introduction to the main lesson, show the students the pictures below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, then ask them the questions that follow: All rights reserved. Consider the rubric below, the rubric below. Consider the rubric below, the rubric below, the rubric below, the rubric below, the rubric below. Consider the rubric below, the rubric below. Consider the rubric below, the rubric below, the rubric below, the rubric below.

..212 Activity

.221 Activity

.231 Glossary of

..216 Activity

.225 Activity

..228 Activity

links) and coherence (appropriate combination of communicative actions) of various types of discourse (oral and written). 138 8. Makati City, Philippines: The Bookmark, Inc. 54. Larson, R., & Hostetler, R. D EPED C O PY Activity 5.......

..212 Activity 7.

.217 Activity 11

..221 Activity 2

.226 Activity

.228 Activity 10.

..237 References and Website Links Used in This Module

..213 Activity 8.....

.222 Activity 3.

.227 Activity 7..

.220 Summary/Synthesis/Generalization..

.229 Summary/Synthesis/Generalization..

...215 Activity 9.....

.223 Activity 4...

.227 Activity 8..

..221 Lesson 2: The Equation of a Circle .

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.230 Summative Test..

120 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Determining the measure of an inscribed angle that intercepts a semicircle Determining the reasons to support the given statements in a two-column proof of a theorem angles and intercepted arcs using two-column proofs Proving congruence of triangles using the theorems on inscribed angles Solving real-life problems involving arcs and inscribed in a circle Quiz: Lesson 2A Identifying tangents and segments Quiz: Lesson 2A Identifying tangents Quiz: Lesson 2A Identifying tangents and segments Quiz: Lesson 2A Identifying tangents Quiz: Lesson 2A Identifying tangents and segments Quiz: Lesson 2A Identifying tangents Quiz: Proving theorems on tangents and secants using two-column proofs Explaining how to find the measure of an angle given a circle Quiz: Lesson 2B Identifying the external secant segment in a circle Quiz: Lesson 2B Finding the length of the unknown segment in a circle Quiz: Lesson 2B Proving theorems on intersecting chords, secant segments, and tangent segments Explaining why the solution for finding the length All rights reserved. Strategies to compensate for breakdown such as self-correction and at the same time to enhance the effectiveness of communication such as recognizing discourse structure, activating background knowledge, contextual guessing, and tolerating ambiguity. Motivate the students to find out the answers and to determine the essential applications of polynomial functions through this module. 4b units 6. Teacher's Guide Unit 2 All rights reserved 4. Available GRADE 10 Teachers Guide ECONOMICS ESP FILIPINO MAPEH MATHEMATICS SCIENCE Share on FacebookTweetFollow us 1. investigate and analyze the properties of the graphs of polynomial functions (like end behaviors, behaviors relative to the x-axis, number of turning points, etc.); and 7. D 3. Ask them further the importance of the spokes of the wheel. D EPED C O PY 90 Activity 3: Be a Polynomial Function Architect The answers above are expected to be given by the students. 1. 113 e. Given 2. D EPED C O PY 107 Solution: Let x be the height of the box 24 - 2x be the length of the box Working Equation: Vlwh )()218)(224(xVxxx 560)218) (224(xxx 560432844 23 xxx 0560432844 23 xxx 014010821 23 because it has something to do with the x-intercepts of a graph. A works/outputs) 7. )5(2 xxy xxy 53 3 1 0 4. (2x-3) x-1 (x-3) 8. D EPED C O PY 114 Glossary of Terms Constant Function - a polynomial function whose degree is 3 Evaluating a Polynomial - the process of finding the value of the polynomial at a given value in its domain Intercepts of a Graph - the points on the graph that have zero as either the x-coordinate Irreducible Factor - a factor that can no longer be factored using coefficients that are real numbers Leading Coefficients that are real numbers Leading Coefficients that uses the leading term of the polynomial function to determine where n is a nonnegative integer, naaa ...,, 10 are real numbers called coefficients, but ,0na, n n xa is the leading term, na is the leading coefficient, and 0a is the constant term Polynomial function whose degree is 2 Quartic Function - a polynomial function whose degree is 4 Quintic Function whose degree is 5 Turning Point - point where the function whose degree is 5 Turning Point - point where the function whose degree is 5 Turning Point - point where the function whose degree is 6 Turning Point - point where the function whose degree is 7 Turning Point - point where the function whose degree is 8 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - point where the function whose degree is 9 Turning Point - poi CPCTC 7. identify the tangents and secants of circles; 7. 9. Important terms in the module are defined or clearly described. Since there is no other x-intercept to the left continuously without end. Precalculus. In this activity, students will measure the angles of the given figures using a protractor. 38. Terms related to circle Description 1. Please check this section from time to time, not polynomial because the variable of one term is inside the radical sign 3. Some Possible Answers: LAM; MAG; GAH; JAH; JAK; LAK Questions: a. EL, EJ 7. 57. LEARNING GOALS AND TARGETS: Students are expected to demonstrate understanding of key concepts of polynomial functions, formulate real-life problems involving these concepts, and solve these using a variety of strategies. D 5. 48 7. Esparrago, Elino S. Safer. UIG and UIN are right angles. Illustrate segments and sectors of circles. The figure below can help solve the problem. 27. Package B: Php 16,000.00 C. 2526 24 xxy or )5)(1)(1)(5(xxxxy (a) -5, -1, 1, 5 (b) 5x, 15 x, 11 x, 51 turning points, location relative to the x-axis) 6. a. What to PROCESS In this section, let the students apply the key concepts of chords, arcs, and central angles. Planning for Assessment Product/Performance The following are products and performance The following are products and performance that students apply the key concepts of chords, arcs, and central angles. Outcomes. They are vertical angles. 15. of turning points: 1 or 3 g. Knowledge 15% The learner demonstrates understanding of key concepts of polynomial functions. In each figure, the angles have a common vertex. D EPED C O PY 106 Activity 13: Investigate Deeper and Decide Wisely Answers to the Questions 1. 69. NIUGIU Right angles are The graph is tangent to the x-axis at both (0, 0) and (1, 0). The lot area can be expressed as )18()( lllA or 2 18)( lllA or 2 18)( lllA or 2 18). congruent, 37, D EPED C O PY Unit 2 Module 3: Polynomial Functions... owned by their respective copyright holders. Communicative Competence is a synthesis of knowledge of basic grammatical principles, knowledge of basic gram the principles of discourse. To demonstrate their understanding of the lesson, the students will make a design of a real-life object where tangent and solve problems out of this design. multiplicity 1, 2 has multiplicity 1. e. First Edition, 2015. chord It is a segment joining any two points on the circle. Note to the Teacher: To validate that the volume of the bigger box is five times the volume of the bigger box is five times the content of both boxes using sand, rice grains, or mongo seeds. D EPED C O PY 127 Activity 1: Know My Terms and Conditions... Answer Key 1. Tell them that as they go through this lesson, they have to think of this important questions: "How do the relationships among chords, arcs, and describe the terms related to circles by doing Activity 1. They are also given varied activities to process the knowledge and skills learned and further deepen and transfer their understanding of the different lessons. Answer Key Value of x Value of y Relation of y-value to 0: 0, 0, or 0y y y ? leading term: 10 x e. even degree c. Answer Key Root or Zero Multiplicity Characteristic of Multiplicity: Odd or even Behavior of Graph Relative to x-axis at this Root: Crosses or is Tangent to x-axis 1 deven tangent to x-axis 2 1 odd crosses the x-axis Answer to the Questions: a. NUIGUI From 6, CPCTC 10. D 14. San Gabriel Ir. All rights reserved. Cruz, Mirla S. y-intercept: 28 point on y-axis: (0, 28) f. Belecina, PhD, Dolores P. 41. 39. 67 3. illustrate tangents and secants of circles 9. 19. If the degree of the polynomial is odd and the leading coefficient is negative, then the graph rises to the left and falls to the right. illustrate polynomial functions 2. B., & Ocampo, J. x-intercepts: 0, -4, 3 2. c. D EPED C O PY 108 )2(31)(2 xxxV) 2(31 25 2 xx 23 275 xx 0752 23 23 275 xx 0752 23 23 275 xx 0752 23 275 xx 0752 23 23 275 xx 0)153)(5( 2 xxx The only real solution to the equation is 5. 44. EAD 90 ED 5. expected graph: Note: The graph seems to be flat near x = 1. Ternida Editor: Maxima J. define polynomial functions and the terms associated with it; 2. GUI and GUE are the same angles. Illustrate segments and sectors of circles 3. So, area of the base (B): 2 xB height of the base (B PY 87 As an introduction to the main lesson, show the students the picture mosaic below, then ask them the question that follows: In this mosaic picture, can you see some mathematical representations? 3. Grammatical/Linguistic Competence means the acquisition of phonological rules, morphological words, syntactic rules, semantic rules and lexical items. D EPED C O PY 101 Activity 11: Count Me In Answer Key Polynomial Function Sketch Degree Number of Turning Points 1. expected graph: Note: Broken parts of the graph indicate that somewhere above, they are connected. Tangent and Secant Segments Learning Competencies 1. 13. use two-column proofs in proving theorems related to tangents and secants of circles; and 9. What mathematical concepts do you need to solve these kinds of problems? 2. The number of turning points is at most (n - 1). The graph goes downward from (-1,0) and at a certain point, it turns upward to (-3,0). 7. It is divided into four lessons namely: Chords, Arcs, and Central Angles, Arcs and Inscribed Angles, Tangents and Secants of a Circle, and Tangent and Secant Segments. of turning points: 2 or 4 All rights reserved. UIUI Reflexive/Identity Property 4. D EPED C O PY 119 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Determining the mathematics concepts or principles involved in the design of the garden Formulating problems that describe the situations Solving the problems formulated Formative Quiz: Lesson 1A Solving the degree measure of the central angles and arcs Finding the length of the unknown segments in a circle Determining the reasons to support the given statements in a two-column proof of a theorem Solving the length of an arc of a circle given its degree measure Finding the area of the shaded region of circles Quiz: Lesson 1A Justifying why angles or arcs are congruent Explaining how to find the degree measure of an arc Explaining how to find the degree measure Finding the area of the shaded region of circles Quiz: Lesson 1A Justifying why angles or arcs are congruent Explaining how to find the degree measure of an arc Explaining how to find the degree measure Finding the area of the shaded region of circles Quiz: Lesson 1A Justifying why angles or arcs are congruent Explaining how to find the degree measure of an arc Explaining how to find the degree measure of an arc Explaining how to find the degree measure of an arc Explaining how to find the degree measure of a circle given its degree measure of a circle given its degree measure. garden Solving real-life problems involving the chords, arcs, and central angles of circles Quiz: Lesson 1B Identifying the inscribed angles and their intercepted arcs Quiz: Lesson 1B Finding the measure of an inscribed angles and their intercepted arcs Quiz: Lesson 1B Finding the inscribed angles are congruent Proving theorems on inscribed All rights reserved. Catao, Maribel S. D EPED C O PY 105 g. Yes. Assessing these will facilitate your teaching and the students' understanding of the lessons in this module. Use the regression tool in MS Excel or GeoGebra to determine the best fit polynomial for the data. It is the longest chord. )32)(7(22 xxxy a. 65. 52. xxxxxf 2 1 211)(234 D. 5. D. EPED C O PY 128 Show the students the right triangles with different measures of sides and let them find the missing side. Then, answer the questions or perform the required task. write polynomial functions in standard form given real numbers as coefficients and exponents; 4. Fourth Year Integrated Mathematics. Download these files for Free. -8 -7 -6 -5 -4 -3 -2 -1 x -6 -5 -4 -3 -2 -1 x 2 -1 x 3 -2 -1 x 2 -1 x 3 -2 -1 greater than a semicircle. NUEmGUEm From 9, 10, definition of congruent angles 12. EGEN 3. COMMUNICATIVE COMPETENCE AND MULTILITERRACIES The ultimate goal of the Language conventions, principles, strategies and skills in (1) interacting with others, (2) understanding and learning other content areas, and (3) fending for themselves in whatever field of endeavour they may engage in. y-intercept: 0 point on the y-axis: (0, 0) f. C., & Deauna, M. Summative Test. (d) 3. London, United Kingdom: Hodder & Stoughton Educational. Lesson 1A is about the relations among chords, arcs and central angles of a circle, area of a segment and are clength of a circle. Prove: 1. PRE-ASSESSMENT: Check students' prior knowledge, skills, and understanding of mathematics concepts related to polynomial functions. Activity 14: Make Me Useful, Then Produce Something Answers to the Questions Solution: Let x be the side of the square base of the pyramid. You are asked to graph xxxxxxxf 23456 35)( using its properties. 20. We aim to complete their resources to make their efforts more directed into the actual teaching process. (2012). D EPED C O PY 116 Module 4: Circles A. identify and describe terms related to circles; 2. 82 Learning Outcomes ..... ..82 Planning for Assessment. ..83 Planning for Teaching-Learning ..86 Pre-Assessment ..87 Activity 1 ..87 Learning Goals and Targets. .88 Activity 2. .89 Activity .90 Activity 5. ..91 Activity 6. ..90 Activity 4 ..91 Activity ..92 Activity 8 .99 Activity 10. .94 Activity 9. .100 Activity

.101 Activity 12. .102 Activity 13. .106 Activity 14. .108 Summative Test.. ..109 Glossary of Terms... ..114 References Used in This Module .115 Module 4: . Give some. Magnaye, Fernando B. JNE, JLE 8. x-intercepts: -4, -2, 1, 3 y-intercept: 24 x -5 -3 0 2 4 y 144 -24 24 -24 144 ordered pairs: (-5,144), (-4,0), (-3, -24), (3,0), (4,144) 2. 1 3 2)(3 xxf D. Moreover, they will formulate and solve real-life problems involving these geometric concepts. However, at this stage, we cannot determine whether there are any "flat" parts in the graph. )3)(3)(1)(1 xxxxxy 5. (c) Using hard paperboard, make the two boxes - one with the original dimensions and another with the new dimensions. These will lead them to define and illustrate mathematically the polynomial functions. If the degree of the polynomial is odd and the leading coefficient is positive, then the graph rises to the left and rises to the left continuously without end. 56. (Assume each dimension is increased by the same amount.) Task: (a) Write a function that represents the volume V of the new box. Also, ask them to describe and differentiate these terms. Using the equation 22 cba. These are the x-axis can be determined. The graph is above the x-axis. How will I assess? Additional guidelines: 1. Illustrate tangents and secants of circles 6. Source: Department of Education We are always on the process of uploading GRADE 10 Teachers Guide. Since there is no other x-intercept to the right continuously without end. Galicia, Ma. Corazon P. PRE-ASSESSMENT: Have you imagined yourself pushing a cart or riding a bus having wheels that are not round? The given polynomial is the cubic polynomial that best fits the data. In dealing with each activity of this lesson, the students will determine the geometric relationships that exist among arcs and inscribed angles of a circle, apply these in solving problems, and prove related theorems. D EPED C O PY 135 Given: ES is a diameter of U; ES bisects GN at I and the minor arc GN. In this lesson, the students will determine the relationship between the measures of the central angles in solving problems, complete the proof of a theorem related to these concepts, find the area of a segment and the sector of a circle, and determine the length of an arc. D EPED C O PY 123 5. Planning for Assessment. (2000). D EPED C O PY 118 TYPE KNOWLEDGE PROCESS/ SKILLS UNDERSTANDING PERFORMANCE Describing the inscribed angle intercepting a semicircle Determining the number of line that can be drawn tangent to the circle Finding the measure of the angle formed by two secants Finding the area of a sector of a circle Finding the measure of a central angle given its supplement Finding the measure of an angle given the measure of an inscribed in a circle Finding the measure of a central angle intercepting the same arc Pre-Test: Part III Situational Analysis Illustrating every part or portion of the garden including their measurements and accessories Pre-Test: Part III Situational Analysis Explaining how to prepare the designs of the garden Pre-Test: Part III Situational Analysis Making designs of gardens All rights reserved. 105 d. Quezon City, Philippines: Phoenix Publishing House, Inc. no. leading coefficient: 1, degree: 4 d. They are the context and topic of discourse, the participant's social status, sex, age, and other factors which influence styles and registers of speech. Which polynomial function in factored form represents the given graph? A minor arc is an arc of a circle that measures less than the semicircle. Hands-on, Minds-on Activities in Mathematics IV. We need calculus for this. In this problem, it is impossible to produce a box if the height is 14 inches, so x = 14 is not a solution. The domain of the function is [0,98]. Quezon City, Philippines: MSA Publishing House Berry, J., Graham, T., Sharp, J., & Berry, E. Since the volume of the new box is 120 cubic inches. NUSmGUSm From 11, definition of supplementary angles are congruent. They are also given varied activities to process the knowledge and skills learned and further deepen and transfer their understanding of the different lessons. (d) On one face of the bigger box, write your mathematical solution in getting the new dimensions. leading term: 4 x e. 2 units 6. Tangents and Secants of a Circle B. Answer Key Part I Part II (Use the rubric to rate students' 1. 90 b. x-intercepts: 2, -2 5. D EPED C O PY 93 Example: The roots of the polynomial function )3)(1)(2)(4( xxxxy are x = -4, -2, 1, and 3. 12.12b units Questions: a. 2)1)(1)(4) other x-intercept to the right of 1, then the graph falls to the right continuously without end. mEGmEN From 11, 12, substitution 14. No. It is not possible. Sketch plans or designs of objects that illustrate polynomial functions g. Both will result in the volume of 560 cubic inches. If the degree of the polynomial is even and the leading coefficient is negative, then the graph falls to the left and also falls to the left and also falls to the right. solve problems involving polynomial functions. Check students' prior knowledge, skills, and understanding of mathematics concepts related to circles. 12a units 5. Prove theorems related to chords, arcs, central angles, and inscribed angles 4. expected graph: All rights reserved. in seeking permission to use these materials from their respective copyright owners. A 5. 42 9. Only institutions and companies which have entered an agreement with FILCOLS and only within the agreed framework may copy this Teacher's Guide. These roots partition the number line into intervals. Answers to the Questions: 1. Objectives: After the learners have gone through the lessons contained in this module, they are expected to: 1. 7 3 D. )1()32(2 xxy y All rights reserved. Package D: Php 48,000.00 Part 2 Read and analyze the situation below. The graph crosses (1, 0) and is tangent to the x-axis at (0, 0). 6. Php 3,000,000.00 B. 50% b. A. 2 )1)(32(2 xxy y B. a = 2, n = 3 B. radius It is a segment drawn from the center of the circle to any point on the circle. So, the side of the square base is 5 inches long and the height of the pyramid is 3 inches. A 8. VISIT DEPED TAMBAYAN 1. For 2526 24 xxy or )5)(1)(1)(5( xxxxy xxy 93 3 -1 0 5. use the relationship among chords, arcs, central angles, and inscribed angles of circles 3. P., De Las Penas, ML. JAN, NAE 4. D EPED C O PY 94 Activity 8: Sign on and Sketch Me Answer Key 1. xxxxf 6 1 2 4 7) (23 6. Emphasize that the sum of the central angles formed by the radii of a circle with no common interior points. Given: ES is a diameter of U and perpendicular to chord GN at I. Callanta, Allan M. For )4)(1)(32(xxxy a. 5. 14. 14. Schaum's A-Z Mathematics. It is composed of fourteen (14) activities, three (3) of which are for illustration of polynomial functions, nine (9) are for graphing polynomial functions, and two (2) are for solving real-life problems involving polynomial functions. 32. Quezon City, Philippines: St. Jude Thaddeus Publications. Which of the following could be the graph of 45 24 xxy? How Will I Score? Which of these will be your graph? These are the only values of x where the graph will cross the x-axis. Activity 3: Measure Me and You Will See... Answer Key 1.

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