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| **Chapter 1**: Graphs from a Calculus Perspective  |
|  | Topics: interval notation, vertical line test/function vs. relation, evaluate function values, find domains, estimate function values on graphs, use a graph to determine domain/range, find y-intercepts, find zeros, test for symmetry, even and odd functions, identify a point of continuity, identify a point of discontinuity, approximate zeros, end behavior of graphs using limit notation, analyze increase/decrease, estimate extrema, find average rates of change, parent functions with transformations, operations with functions, composition of functions, horizontal line test, find inverses algebraically, verify inverses, find inverses graphically |
| 1. | State the domain and range of the function:  | 3. | Is the following a function? 11Pcal_01_02_00_01_a |
| 2. | State the domain of the function:  |
| 4. | Evaluate the following:  |  |  |
| 5. | What is the domain and range? 11Pcal_01_02_02_A_a | 6. | What type of symmetry does this function have? Confirm this algebraically. Would you describe this function as even, odd, or neither? 11Pcal_01_02_05_A_e |
| 7. |   What type of symmetry does f(x) have? Could you describe this function as even or odd? | 8. | Determine whether the function  is continuous at . Justify your answer using a table and if there is a discontinuity specify the type.  |
| 9. | Determine whether the function  is continuous at . Justify your answer using a table and if there is a discontinuity specify the type.  | 10. | Find the average rate of change of  on the interval [–3, –1]. |
| 11. | Describe the end behavior of the graph using limits. Find any extrema and classify them. State the intervals where the graph is increasing and decreasing. 11Pcal_01_04_01_A_e | 12. | Describe the end behavior of the graph using limits. Use your graphing calculator to find any extrema and classify them. State the intervals where the graph is increasing and decreasing. 11Pcal_01_03_05_B_a |
| 13. | Describe the following characteristics of the graph of the parent function : domain, range, intercepts, symmetry, continuity, end behavior, and invervals on which the graph is increasing/decreasing. |
| 14. | Write the equation of the graph of  that is being horizontally dilated by a factor of  , vertically dilated by a factor of 3 and reflected across the y-axis. |
| 15. | Use the graph of to graph: |  |
|  | a.)  | b.)  |
| 16. | Given  and  find: |  |
|  | a.)  | b.)  | c.)  | d.)  |
| 17. | Graph  and apply the horizontal line test to determine whether its inverse function exits. Is the function one to one? |
| 18. | Find the inverse of  |
| 19. | Verify that and  are inverse functions. |
| 20. | Graph and use that graph to sketch it inverse function.

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| **Chapter 2**: Power, Polynomial, and Rational Functions  |
|  | Topics: operations with complex numbers, apply the leading term test for end behavior , factor to find zeros of a polynomial function (identify the # of zeros first), sketch a polynomial function (using lead term test, find zeros/multiplicity(odd/even), then graphing), long division of polynomials, synthetic division, Rational Zero Theorem, factoring higher order polynomials, rational functions: finding holes, horizontal asymptotes and vertical asymptotes, graphing rational functions, solving rational equations  |
| 1. | Simplify a. b.  | 2. | Simplifya.b.  |
| 3. | For  use your knowledge of the zeros and the end behavior to make a sketch of the graph.  | 4. | Describe the end behavior ofusing the leading term test. How many possible zeros are there? How many possible turning points does this graph have? |
| 5. | Factor using long division if is a factor.  | 6. | Divide by  using long division.  |
| 7. | Divide by  | 8. | Find the remainder when is divided by . What does this remainder tell you about the original function?  |
| 9. | Confirm that and factors of . Then rewrite f(x) in factored form.  | 10. | For f(x) how many possible zeros are there? List all of the possible rational zeros. . Which ones are actually zeros?  |
| 11. | Find the domain and the equations of any vertical or horizontal asymptotes or holes:  | 12. | Determine any asymptotes, holes, and what the intercepts are, then graph: a) b)  |
| 13.  | Write a polynomial function of least degree with real coefficients in standard form that has -3 and 2i as zeros. | 14.  | Solve:  |

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| **Chapter 4**: Trigonometric Functions |
|  | Topics: Right triangle trigonometry, SOHCAHTOA, special right triangles, six trig functions, solving right triangles, application problems, convert degrees to radians, angles in standard position, coterminal angles, arc length, angular and linear speed, area of a sector, reference angles, unit circle, inverse trig functions, graphing all six trig functions and finding equations from graph for all 6 trig functions. |
| 1.  | If , find the exact values of the five remaining trigonometric functions for the acute angle 45°12 cm*x* |
| 2. | Solve for x, exact answers only. |
| 5m30°60° | a.  | b. |  *x* |
| 3. | A 32 foot ladder leaning against the side of a house makes a angle with the ground. How far up the side of the house does the ladder reach? |
| 4. | A pre-calculus student is in Cape Canaveral watching the launching of the latest rocket ship. She is standing on the ground 450 feet away from the launch site. Assuming the rocket travels straight up, what will be the angle of elevation from the student to the rocket when the rocket hits 2000 feet off the ground?  |
| 5. | Convert the following degree measurements into radians. Exact answers only, no decimal approximations.  |

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|  | a.  |  | b.  |  | c.  |
| 6. Convert the following radian measurements into degrees. Your answer should not include . |
|  | a.  |  | b.  |  | c. |

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| 7. | For each angle below: sketch the given angle in standard position, find its reference angle, find and draw one positive and one negative angle coterminal with the given angle.  |
|  | a.  | b.  |
| 8. | Given intercepted arc with a central angle of  and a radius of 4 cm. |
|  | a. Find the length of the intercepted arc | b. Find the area of the sector of the circle |
| 9. | If you have a tire with a 30 inch diameter that rotates at 110 revolutions per minute, |
|  | a. Find the angular speed in radians per minute. | b. Find the linear speed in miles per hour. |
| 10. | Let be a point on the terminal side of an angle  in standard position. Find the exact values of the six trigonometric functions of . |
| 11. | Let , where . Find the exact values of the remaining five trigonometric functions of  |
| 12. | Find the exact value of each expression. |
|  | a. |  | b. |  | c. |  |