

QUARTERLY ASSESSMENT # 2 REVIEW

*All work should be done on separate looseleaf

Unit 0: Families of Functions	Unit 1: Polynomials	Unit 2: Quadratics	Unit 3: Polynomial & Rational Functions	Unit 4: Systems of Equations	Unit 5: Rational Exponents & Radical Equations
1. Identifying function family from table, equation & graph. 2. Average Rate of Change 3. End Behavior 4. Key Function Features	1. Polynomial Closure under Division 2. Polynomial Division 3. Remainder Theorem	1. Solving Quadratic Functions 2. Complex Conjugates 3. Powers of i 4. Directrix & Focus 5. Discriminant	1. Factor by Grouping 2. Difference & Sum of Cubes 3. Multiplicities of Roots on Graphs	1. System of 3 equations 2. Nonlinear system on calculator 3. Nonlinear system algebraically	1. Solving radical equations. 2. Converting between rational exponents & radicals 3. Inverses

1. What is the solution to the following system of equations? $y = \ln(x)$ $x + y = 1$ <div style="text-align: right; margin-top: 10px;"> (1, 0) </div>	2. Solve the rational equation $\frac{2x}{5} = -4 + \frac{x-1}{x+2}$. Show your work. Remember to check for extraneous solutions. $x = -\frac{9}{2} \quad x = -5$
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3. What is the distance between the points of intersection of the graphs $y = x^2$ and $y = 6 - x$? (1) $\sqrt{26}$ (2) $5\sqrt{2}$ (3) $2\sqrt{37}$ (4) $\sqrt{170}$ Distance Formula $\sqrt{(2-3)^2 + (4-9)^2} = \sqrt{50} = 5\sqrt{2}$	4. Write each expression in exponential form. (a) $(\sqrt{10})^3$ (b) $(\sqrt[5]{2})^5$ $10^{\frac{3}{2}} \qquad 2^{\frac{5}{4}}$
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5. Which of the following simplify as a quotient of two binomials when the indicated operation is performed?

(1) $\frac{x^2 + 4x}{x^2 + 2x - 8} + \frac{3}{x - 2} = \frac{x + 3}{x - 2}$	(2) $\frac{x^2 + x}{x^2 + 2x - 15} - \frac{3}{x - 3} = \frac{(x - 5)(x + 3)}{(x + 5)(x - 3)}$
(3) $\frac{x^2 + 11x + 30}{x^2 + 10x + 21} \cdot \frac{x + 3}{x + 6} = \frac{x + 5}{x + 7}$	(4) $\frac{x^2 - 10x + 25}{x^2 + 3x - 28} \div \frac{x - 4}{x + 7} = \frac{(x - 5)(x - 5)}{(x - 4)(x - 4)}$
(5) $\frac{x^2 - 2x - 24}{x^2 + 4x - 5} \cdot \frac{x^2 + 3x - 10}{x^2 + x - 12} \cdot \frac{x^2 - 4x + 3}{x^2 - 8x + 12} = 1$	

6. Which of the following systems of equations have at least one solution in Quadrant I?

(1) $4x + 3y = 1$ $y = \frac{1-4x}{3}$ (2) $x - 3y = 2$ $y = \frac{2-x}{-3}$
 $y = x^2 - x + 1$ $y = x^2 + 2x - 34$

(3) $3x + y = -2$ $y = -2 - 3x$ (4) $2x + y = -1$ $y = -1 - 2x$
 $y = x^2 - 2x - 4$ $y = -x^2 - 6x - 5$

(5) $x + y = 3$ $y = 3 - x$
 $y = x^2 - 8x + 16$

7. Josie solved the radical equation $\sqrt{-8x - 16} - 2 = x$ algebraically and said that the equation has two solutions: -2 and -10. Is Josie correct? Explain why or why not.

skip

8. If $\frac{2x^2 + 11x - 23}{x+7} = 2x + a - \frac{2}{x+7}$, what is the value of a? Show your work.

$a = -3$

9. What is the solution to the following system of equations?

$(0, -3)$ and $(2, -1)$
 $(x - 2)^2 + (y + 3)^2 = 4$
 $x - y = 3$

10. Write each expression in radical form:

(a) $a^{\frac{6}{5}}$ (b) $(5x)^{-\frac{1}{2}} = \frac{1}{\sqrt{5x}}$
 $\sqrt[5]{a^6}$

11. Is $(x + 3)$ a factor of $12x^3 + 3x^4 + 7x^2 - 1$?

NO

What are three different methods you can use to answer this question?

- Remainder Thrm
- Division
- check in calculator (graph/table)

12. Solve the following system of equations algebraically:

$(3, 5, 4)$

$x = 3(y - z)$

$y = 5(z - x)$

$x + y = z + 4$

13. Solve the following radical equations:

(a) $\sqrt{x^2 - 4x} = -4 + x$

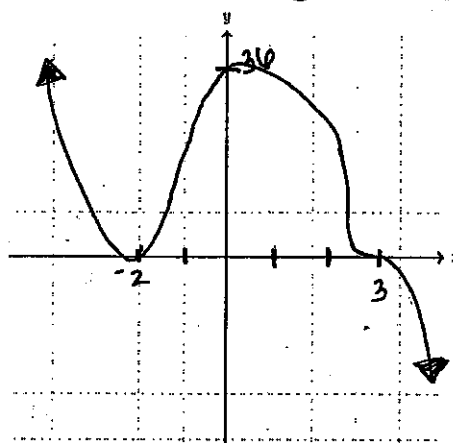
(b) $\sqrt[3]{x^2 + 4} - 2 = 0$

(c) $\sqrt{3x - 4} = \sqrt{2x + 9}$

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14. Sketch the following polynomial (try without using calculator):

$f(x) = -\frac{1}{3}(x + 2)^2(x - 3)^3$
 Bounce @ -2 wobble @ 3



15. Factor the polynomials completely:

(a) $3x^2 + 8x + 24x + 64 = (x + 8)(3x + 8)$

(b) $8x^3 - 64 = (2x)^3 - (4)^3 = (2x - 4)(4x^2 + 8x + 16)$

(c) $4x^2 - 68x + 288 = 4(x - 8)(x - 9)$

16. The expression $i^0 \cdot i^1 \cdot i^2 \cdot i^3 \cdot i^4$ is equal to

$= i^{10} = -1$

- (1) 1 (2) -1 (3) i (4) -i

y intercept: $-\frac{1}{3}(2)^2(-3)^3 = 36$

degree: 5 (odd - diff end)

leading coefficient: negative (decreasing)