

Name _____

Unit 5 Extra Practice

- 1) Solve for x.

$$\frac{3}{-16} = \frac{x^2}{7}$$

- 2) Simplify. (Assume the denominator does not equal 0)

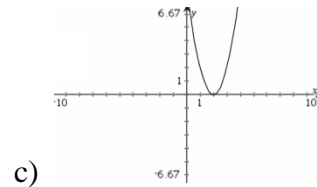
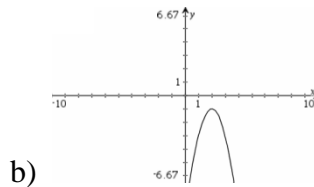
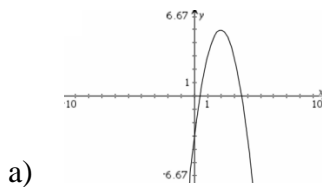
$$\frac{x^2 - 5x - 14}{x^2 - 11x + 28}$$

- 3) Find the discriminant and determine the nature of the roots.

$$3x^2 = -7x - 12$$

- 4) The height of a projectile launched from a catapult can be found using the following function $h(t) = -26t^2 + 135t + 8$ where t is the time in seconds and h is the height of the projectile in feet. How many seconds after the projectile is launched will it first reach 125 feet?

- 5) Describe the roots of the quadratics graphed below.



- 6) Mr. Roemer graphed a parabola. Its vertex is $(-3, 7)$, crosses the x -axis at 8 and 12, and it crosses the y -axis at -2 . What are the roots of the equation he has graphed?

- 7) Solve $0 = 3x^2 - 145x - 2198$ to the nearest hundredth.

- 8) Find the discriminant and describe the roots of $2x^2 + 4x - 10 = 0$.
- 9) The function $y = 25(x - 17)^2 + 4857$ models Toyota's expenses for the production a particular model of car they want to produce where x is the number of workers they place on the assembly line. How many workers should they place on the assembly line in order to MINIMIZE their expenses? What would the minimum expenses be?
- 10) Mrs. Allen wants to use landscape timbers to enclose the rectangular garden she wants to plant adjacent to her house. She has 120 feet of landscaping timbers. What is the maximum amount of area (in square feet) that she can enclose using her landscaping timber?

11) Find the vertex of the function $y = x^2 + 6x + 2$

- 12) Use the table of values for the quadratic function below to determine between which two x values $f(x)$ would find a root of the equations.

x	1	2	3	4	5	6
$f(x)$	-12	-9	-4	3	12	23

- 13) How does the graph of $y = \frac{-2}{3}(x - 4)^2 + 3$ compare to the graph of the parent quadratic functions?
- 14) Write a quadratic function in the form $y = ax^2 + bx + c$ whose graph opens downward and has roots of $6 \pm \sqrt{8}$.
- 15) When asked to solve the inequality $0 \geq x^2 - 12x + 4$, Mr. Hagains thought about its graph and responded that x could be any real number. Was he correct? Why or why not?