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Practice Final

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_Per\_\_\_\_\_\_\_\_\_\_\_

**F.IF.8 Write a function in different but equivalent forms.**

**F.IF.7a Graph quadratic functions expressed symbolically**

**F.IF.8a Use the process of factoring (and expanding) in a quadratic function to show zeros (intercepts), extreme values (vertex) and symmetry of the graph.**

**Show all your work.**

1. Combine like terms:

 a. (2r – 9) (-3r – 7) b. -5p(6p2 + 5p + 8)

2. a. Make a table of the following equation: y = 2*x*2 – 4*x*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| y |  |  |  |  |  |  |  |

b. Sketch a graph of the table.

c. What are the roots (x-intercepts) for this equation?

d. What is the vertex for this equation?

3. Without graphing, fill in the following information for the given equation. Show all work.

*Don’t forget to use correct notation.*

 2*v*2 – 9*v* + 1 = -3

Factored Form:

x-intercept(s):

y-intercept:

Line of symmetry:

Vertex:

|  |
| --- |
| **A.REI.4b Solve quadratic equations by quadratic formula and factoring.**  |
| **F.IF.8a Show zeros, extreme values & symmetry to interpret these in context of quadratic functions.** |

4. Solve the following quadratic equations using the best method. Show all your work. Round to the hundredth place, when necessary.

1. 2*x*2 – 4= 9*x* b. $3x^{2}-3x-36=0$

5. You and a friend are hiking in the mountains. You want to climb to a ledge that is 20 feet above you. The height of the grappling hook you throw is modeled by the equation$ h=-16t^{2}+32t+5$, where $h$ is the height in feet and $t$ is the time in seconds.

* Draw a picture
* Use the equation to fine the solution(s) and answer the question(s)
	+ *Don’t forget to: label, show all work and round answers to the hundredth place*

|  |
| --- |
| 1. If you miss the ledge when you throw the grapping hook, how long will it take for the hook to hit the ground below?
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| 1. What is the maximum height the grappling hood can reach? (Show all work)
2. Can the grappling hook reach the ledge? Explain how you know.
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| **A.REI.2 Solve simple and radical equations in one variable**  |
| **F.IF.1 Understand function, domain and range.**  |
| **F.IF.2 Use function notation to evaluate functions.**  |

6. Solve the following equation for the variable. Show all steps.

|  |  |  |
| --- | --- | --- |
| a. $-7\left|9+x\right|-9=-16$   | b. $11-9\left|-7+6x\right|=56$  | c. $4=-6+\sqrt{-2-17x}$ |

7. Find the domain and range of the following.

|  |  |  |
| --- | --- | --- |
| a. $y=\frac{6}{x-7}$$ f(x)=\frac{5}{x-7}$$ $$y=\frac{6}{x+4}$Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Function?: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | b. $g(x)=\sqrt{x-7}$ Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Function?: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. {(0, 2), (3, 1), (0, 0), (1, -1)}

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Function?: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

8. Use function notation to evaluate the following functions. Show all steps and correct notation!

***g*(*x*) = *x2* – 8 h(*x*) = 7*x* – 3**

1. *g*(h*(x)*) = b. *h(x)* = 32