Geometry CC
15.1-15.2 Quiz Review

Name: KEY
Date: ____________ Period: ______

Give the transformations for the following. (From $f(x) = x^2$ to $g(x)$).

1. $g(x) = -\frac{1}{2}(x+4)^2 - 7$

a) Reflection x-axis
b) V.C. by 1/2
c) H.T left 4
d) V.T down 7

2. $g(x) = (4x)^2 - 2$

a) H.C. by 1/4
b) V.T. down 2

3. $g(x) = (x-9)^2$

a) H.T right 9

4. $g(x) = -\left(\frac{1}{3}x\right)^2 + 5$

a) Reflection x-axis
b) H.S by 3
c) V.T. up 5

5. $g(x) = 9x^2$

a) V.S. by 9

6. $g(x) = -(x+13)^2$

a) Reflection x-axis
b) H.T. left 13

7. Write an equation of a function which would have a reflection over the x-axis, a vertical compression of $\frac{1}{4}$, a horizontal translation of 5 units to the left, and a vertical translation of 7 units up. Use x^2 as your parent function.

$$h(x) = -\tfrac{1}{4}(x+5)^2 + 7$$

8. Write an equation of a function which would be compressed horizontally by a factor of $\frac{1}{6}$ and translated down 8 units. Use x^2 as your parent function.

$$g(x) = (6x)^2 - 8$$

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For each function, (a) determine whether the graph opens up or down, (b) find the axis of symmetry, (c) find the vertex, (d) find the y-intercept, (e) identify the domain and range, and (f) determine if the graph has a maximum or minimum. Then graph the function. (Label your axis of symmetry and vertex)

9. $f(x) = x^2 + 2x - 3$ opens up

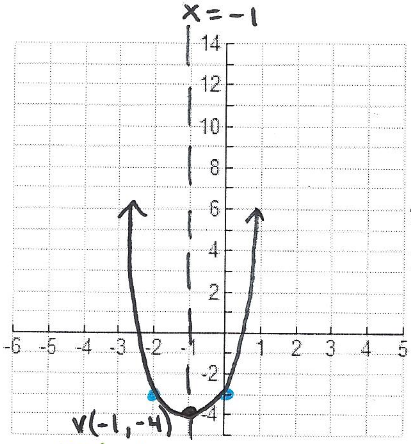
AOS: $x = \frac{-b}{2a} = \frac{-(2)}{2(1)} = -1$

$V(-1, -4)$

$(-1)^2 + 2(-1) - 3$

y-int: $(0, -3)$

x = -1



Domain: $\mathbb{R}$
Range: $y \geq -4$

10. $h(x) = -x^2 + 4x - 2$ opens down

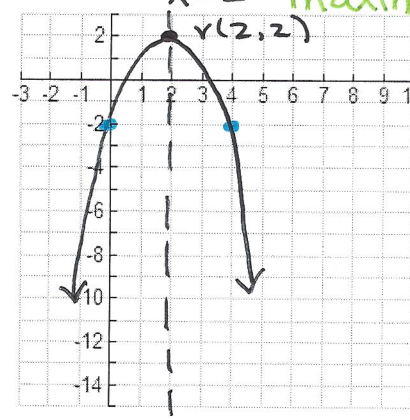
AOS: $x = \frac{-b}{2a} = \frac{-(4)}{2(-1)} = 2$

$V(2, 2)$

$-(2)^2 + 4(2) - 2$

y-int: $(0, -2)$

x = 2 maximum



Domain: $\mathbb{R}$
Range: $y \leq 2$

11. $f(x) = -(x+3)^2 + 4$ opens down
opp keep

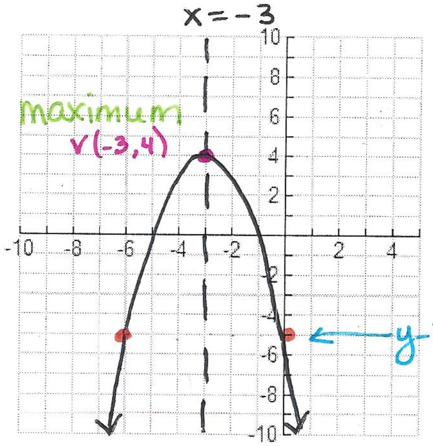
$V(-3, 4)$

AOS: $x = -3$

Another point $(0, -5)$

$-(0+3)^2 + 4$

x = -3



Domain: $\mathbb{R}$
Range: $y \leq 4$

12. $f(x) = \frac{1}{2}(x+4)^2 - 2$ opens up
opp keep

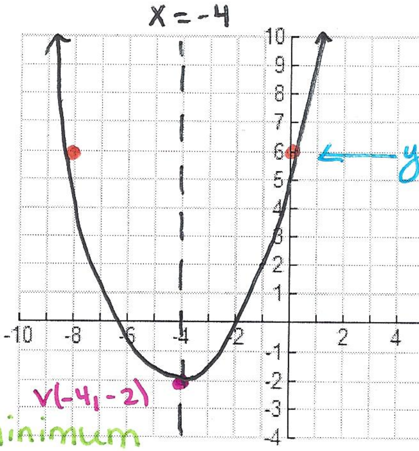
$V(-4, -2)$

AOS: $x = -4$

Another point $(0, 6)$

$1/2(0+4)^2 - 2$

X = -4



Domain: $\mathbb{R}$
Range: $y \geq -2$