

From vertex: out 1 up 1 \geq x by a
 out 2 up 4

Name Key Hour _____

Ch 3 Translations of Quadratic Functions

For each function below, **(A)** identify the parent function, then **(B)** Describe in words the transformations made to the parent function.

1. $f(x) = x^2 - 3$

down 3

2. $f(x) = (x+2)^2$

left 2

3. $f(x) = x^2 + 5$

up 5

4. $f(x) = (-x+4)^2$

left 4
 flipped over y-axis

5. $f(x) = -6x^2$

flipped over x-axis
 stretched

6. $f(x) = \frac{1}{4}x^2 - 3$

down 3
 compressed

7. $f(x) = \frac{2}{5}x^2 - 2$

down 2
 compressed

8. $f(x) = 3x^2 + 1$

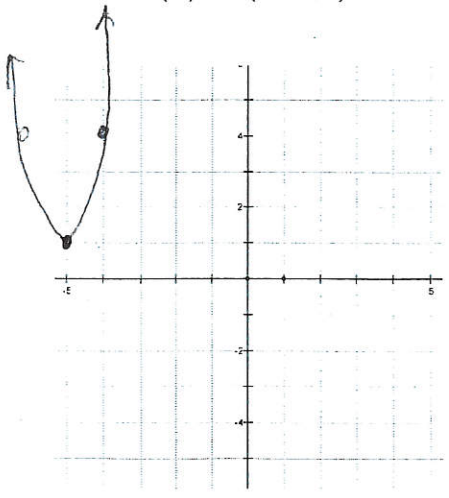
stretched
 up 1

9. $f(x) = -(x+3)^2 - 5$

flipped over x-axis
 left 3
 down 5

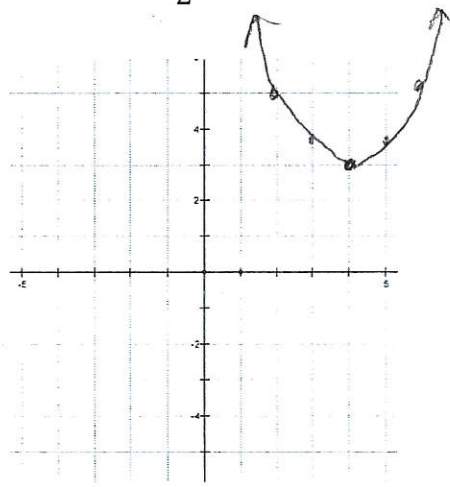
Sketch a graph of the function with the indicated transformations. (No Calculator)

10. $f(x) = 3(-x-5)^2 + 1$



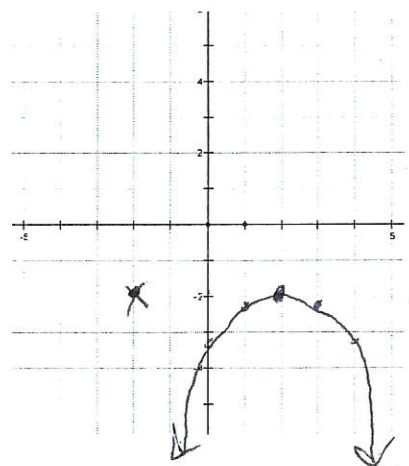
(5,1) flipped over y-axis = (-5,1)

11. $f(x) = \frac{1}{2}(x-4)^2 + 3$



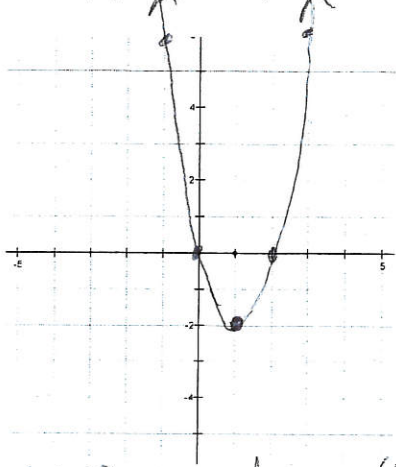
(4,3)

12. $f(x) = -\frac{1}{3}(-x+2)^2 - 2$



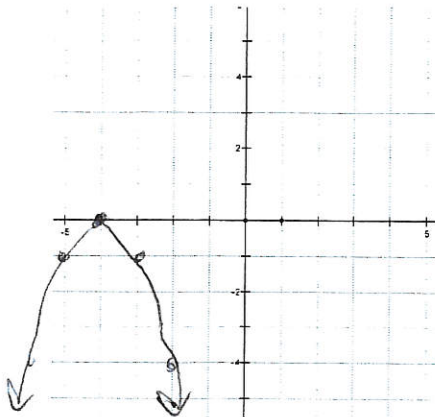
(-2, -2) flipped over y-axis = (2, -2)

13. $f(x) = 2(-x+1)^2 - 2$



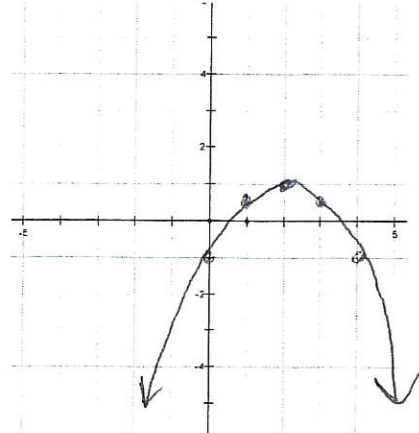
$(-1, -2)$ Flipped y-axis $(1, -2)$

14. $f(x) = -(x+4)^2$



$(-4, 0)$

15. $f(x) = -\frac{1}{2}(x-2)^2 + 1$



$(2, 1)$

Write the function for $f(x) = x^2$ with the indicated transformations.

16. Vertical stretch by a factor of 3, horizontal shift left 5

$$f(x) = 3(x+5)^2$$

17. Moved 4 units right and 5 units down.

$$f(x) = (x-4)^2 - 5$$

18. moved 6 units left and 2 units up.

$$f(x) = (x-6)^2 + 2$$

Use the graphs below to identify each function. Write the function that corresponds to each graph.

19. $f(x) = -(x-2)^2 + 5$

20. $f(x) = (x+4)^2 - 2$

