7.4 Quadratic and Abs. Value Transformations
Pre Cal

Name:_____

Describe *in words* how the parent graph, $f(x)=x^2$, is transformed into g(x).

1. $g(x)=2.8(x+16)^2+10$

left 16
up 10
narrower by a factor of 2.8

2. $g(x)=-\frac{3}{10}(x-11)^2+6$

right 11
up 6
wider by a factor of $\frac{3}{10}$ and reflected

Describe *in words* how the parent graph, $f(x)=|x|$, is transformed into g(x).

3. $g(x)=7|x+2|-5$

left 2
down 5
narrower by a factor of 7

4. $g(x)=-\frac{1}{8}|x-3|+4$

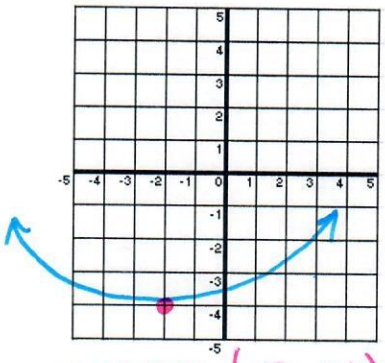
right 3
up 4
wider by a factor of $\frac{1}{8}$
reflected

5. $g(x)=-|x+6|+7$

left 6
up 7
reflected

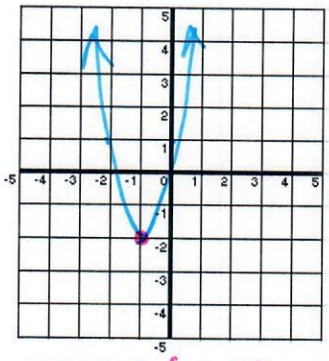
#6-8 Sketch the graph of the function. Label each vertex.

6. $f(x)=\frac{1}{5}(x+2)^2-4$



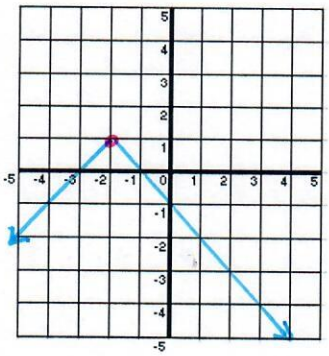
vertex: (-2,-4)
wider

7. $g(x)=3(x+1)^2-2$



vertex: (-1,-2)
narrower

8. $h(x)=-|x+2|+1$



"vertex" (-2, 1)
reflected

9. Based on the description, write the equation in the form of $y = a \cdot f(x-c) + d$ for the parent graph, $f(x) = |x|$.

a.) The graph is reflected over the x-axis, widened by a factor of $\frac{1}{2}$, and translated 3 units to the right.

$y = -\frac{1}{2}|x-3|$

b.) The graph is narrowed by a factor of 3, translated 4 units to the left, and 8 units down.

$y = 3|x+4| - 8$

10. Record the letters in order from narrowest graph to the widest.

A. $y = -2f(x)$ *B.* $y = \frac{1}{2}f(x)$ *C.* $y = 5f(x)$ *D.* $y = \frac{8}{3}f(x)$ *E.* $y = -\frac{1}{3}f(x)$

coefficients from greatest to least C, D, A, B, E

Describe <u>*in words*</u> how the parent graph, $f(x) = x^2$, is transformed into g(x).

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

- shifted up 3
- shifted right 1
- wider by a factor of 1/5

12. $g(x) = -7(x-11)^2 + 2$

- shifted up 2
- shifted right 11
- narrower by a factor of 7
- reflected over x-axis

Describe <u>*in words*</u> how the parent graph, $f(x) = |x|$, is transformed into g(x).

13. $g(x) = \frac{1}{2}|x+4| - 9$

left 4
down 9
wider by 1/2

14. $g(x) = -5|x-3| + 4$

right 3
up 4
narrower by 5
reflected

15. $g(x) = 2|x| - 7$

down 7
narrower by 1/2