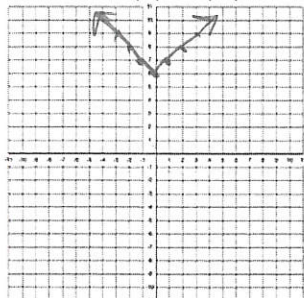


Chapter 1 Review: Standard 1A and 1B

Name Key Hr _____

Graph each function. Compare the graph to the graph of $f(x) = |x|$ by describing the transformations. Identify the domain and range of the function.

1. $m(x) = |x| + 6$



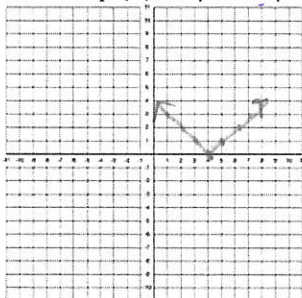
Transformations:

up 6

Domain: $(-\infty, \infty)$

Range: $[6, \infty)$

2. $p(x) = |x - 4|$



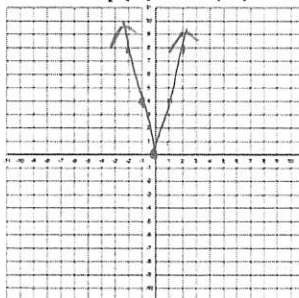
Transformations:

right 4

Domain: $(-\infty, \infty)$

Range: $[0, \infty)$

3. $q(x) = 4|x|$



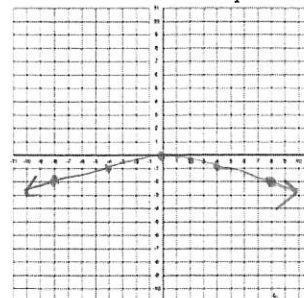
Transformations:

stretch

Domain: $(-\infty, \infty)$

Range: $[0, \infty)$

4. $r(x) = -\frac{1}{4}|x|$



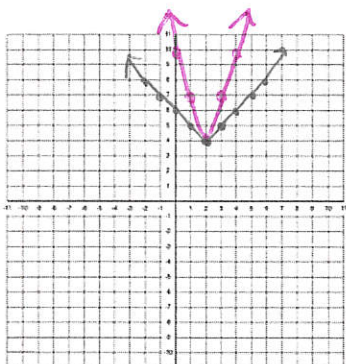
Transformations:

reflect over x-axis, compress

Domain: $(-\infty, \infty)$

Range: $(-\infty, 0]$

5. Graph $f(x) = |x - 2| + 4$ and $g(x) = 3|x - 2| + 4$. Compare the graph of g and the graph of f .

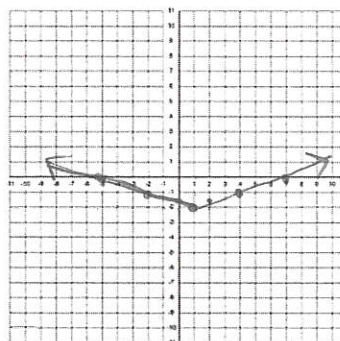


It is stretched by a factor of 3

6. Let $g(x) = \frac{1}{3}|x - 1| - 2$. Describe the transformations from the parent function to $g(x)$. Then use those transformations to graph $g(x)$.

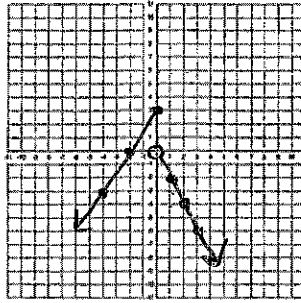
Transformations:

compress
right 1
down 2



out up
1 1/3
3 1
6 2

7. Graph $y = \begin{cases} \frac{3}{2}x + 3, & \text{if } x \leq 0 \\ -2x, & \text{if } x > 0 \end{cases}$

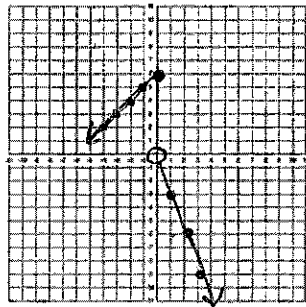


8. Evaluate the function on the left at the following values.

a. $f(0) = 3$
 b. $f(5) = -10$

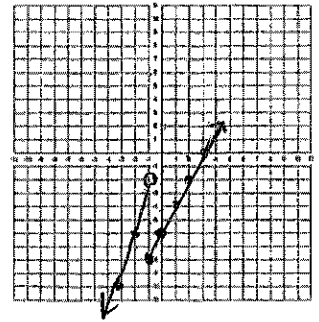
For each of the following functions, graph each and describe the domain and range.

9. $y = \begin{cases} x + 6, & \text{if } x \leq 0 \\ -3x, & \text{if } x > 0 \end{cases}$



Domain: $(-\infty, \infty)$
 Range: $(-\infty, 6]$

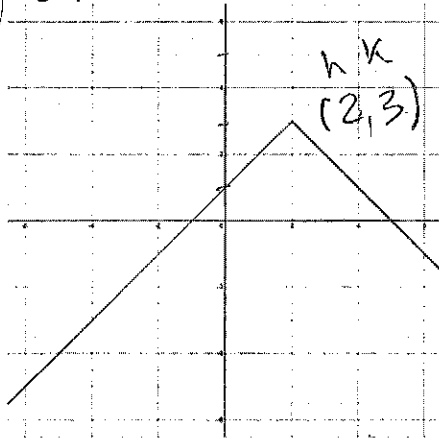
10. $y = \begin{cases} 4x + 2, & \text{if } x < -1 \\ 2x - 6, & \text{if } x \geq -1 \end{cases}$



Domain: $(-\infty, \infty)$
 Range: $(-\infty, \infty)$

Given each graph below write the function that describes the graph.

11.

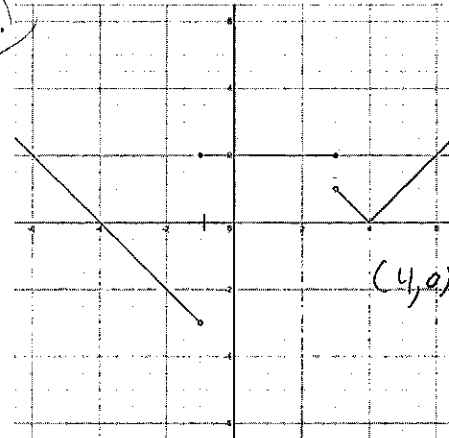


h, k
 $(2, 3)$

$a = -1$

$y = -|x - 2| + 3$

12.



$y = mx + b$

$y = a|x - h| + k$

$(4, 0)$

$y = \begin{cases} -x - 4 & x < -1 \\ 2 & -1 \leq x \leq 3 \\ |x - 4| & 3 < x \text{ or } x > 3 \end{cases}$

For each set of criteria, write the function that matches that criteria.

13. An absolute value function that has been reflected over the x-axis, shifted 4 units left, and shifted 2 units up.

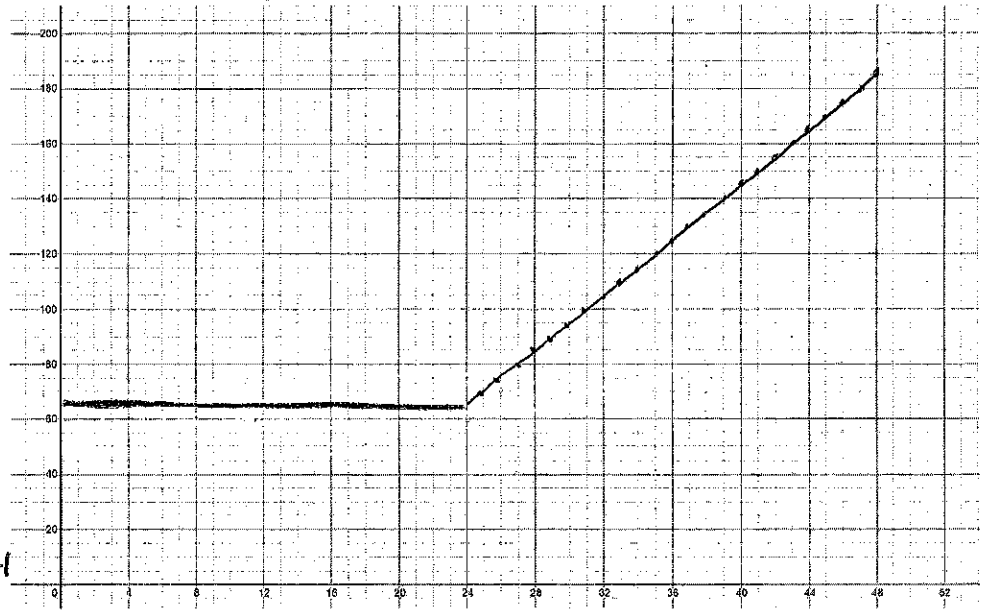
$f(x) = -|x + 4| + 2$

14. An absolute value function that has a vertical shrink of $\frac{3}{4}$, has been shifted 3 units right, and shifted 1 unit up.

$f(x) = \frac{3}{4}|x - 3| + 1$

For lines use $y - y_1 = m(x - x_1)$ plug in your point and slope then solve for y to get the y int.

15. You are organizing a school fair and rent a popcorn machine for 2 days. The rental company charges \$65 for the first day, and \$5 per hour for every hour after the first 24 hours. Write and graph a piecewise function that represents the cost of renting the popcorn machine for 2 days.



$$f(x) = \begin{cases} 65 & 0 \leq x \leq 24 \\ 5x - 55 & 24 < x \leq 48 \end{cases}$$

The x-axis has a scale of 4 and the y-axis has a scale of 20. 24 hrs. is 65 + 5 for 1 more hour giving (25, 70).
 $y - 70 = 5(x - 25)$
 $y = 5x - 55$

Simplify each of the following expressions (Positive exponents only):

16. $y^3 \cdot y^{-5} = \frac{1}{y^2}$
 17. $\frac{x^4}{x^7} = \frac{1}{x^3}$
 18. $(x^0 y^2)^3 = y^6$
 19. $(\frac{2x^2}{5y^4})^{-2} = \frac{5^2 y^8}{2^2 x^4} = \frac{25y^8}{4x^4}$

Evaluate each of the following expressions:

20. $\sqrt[3]{8} = 2$
 21. $\sqrt[5]{-243} = -3$
 22. $625^{3/4} = 125$
 23. $(-25)^{1/2}$ not a real number

Simplify the following expressions and write your answers with positive rational exponents:

24. $4^{1/3} \cdot 4^{2/3} = 4^{1/3+2/3} = 4^1 = 4$
 25. $7x^{-4} z^{1/2} \cdot 2x^2 z^{1/2} = 14x^{-4+2} z^{-1/2+1/2} = 14x^{-2} z^0 = \frac{14}{x^2}$
 26. $(2a^{2/3})^3 = 2^3 a^{-2/3 \cdot 3} = 8a^{-2} = \frac{8}{a^2}$
 27. $(\frac{8x^2}{y^3})^{2/3} = \frac{8^{2/3} x^{4/3}}{y^2} = \frac{4x^{4/3}}{y^2}$

Simplify the following expressions and write as rational exponents:

28. $z^{2/3} \sqrt{z^5} = z^{2/3} \cdot z^{5/2} = z^{2/3+5/2} = z^{19/6}$
 29. $x^{1/2} + x^{-2} \sqrt{x^5} = x^{1/2} + x^{-2} \cdot x^{5/2} = x^{1/2} + x^{5/2-2} = x^{1/2} + x^{1/2} = 2x^{1/2}$
 30. $y^{2/3} \cdot \sqrt[3]{y^5} = y^{2/3} \cdot y^{5/3} = y^{2/3+5/3} = y^{7/3}$

Write the radical in rational exponent form

Write the rational exponent in radical form.

31. $\sqrt[4]{7x^3} = 7^{1/4} x^{3/4} \text{ or } (7x^3)^{1/4}$
 32. $(\sqrt[3]{4m})^2 = (4m)^{2/3}$
 33. $(6y)^{5/2} = \sqrt[2]{(6y)^5}$
 34. $2x^{5/4} = 2\sqrt[4]{x^5}$

