

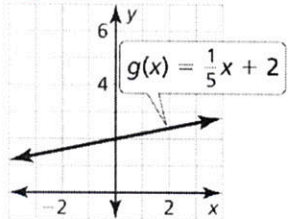
Key

Chapter 1 Review Sheet. 1 Sticker per Page, keep work neat

Identify the function family to which g belongs.

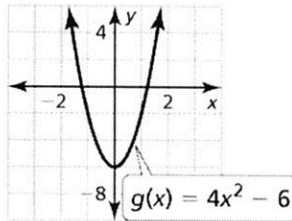
1. $g(x) = \frac{1}{5}x + 2$

Linear



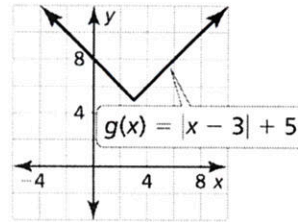
2. $g(x) = 4x^2 - 6$

Quadratic



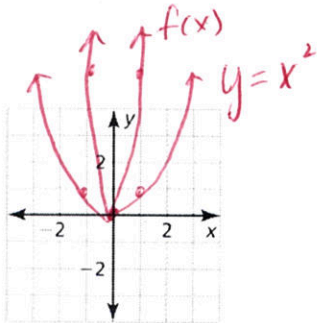
3. $g(x) = |x - 3| + 5$

abs. value

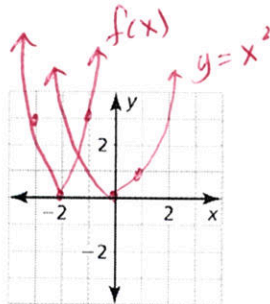


Graph the function and its parent function. Then describe the transformation.

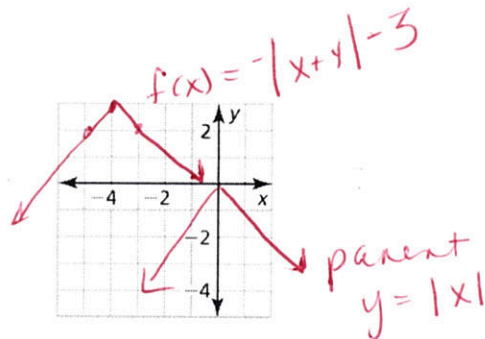
4. $f(x) = 5x$



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



6. $f(x) = -|x + 4| - 3$



Write a function g whose graph represents the indicated transformation of the graph of f .

7. $f(x) = 4x + 1$; translation 2 units left $f(x+a)$ $f(x) = 4(x-2) + 1$

8. $f(x) = -4|x - 2|$; vertical shrink by a factor of $\frac{1}{2}$ $a f(x)$ $f(x) = \frac{1}{2}(-4)|x-2|$
 $\frac{1}{2} f(x)$ $f(x) = -2|x-2|$

9. Let g be a translation 4 units down and a horizontal shrink by a factor of $\frac{1}{4}$ of the graph of $f(x) = x$. $f(x) = \frac{1}{4}x - 4$

10. Let g be a reflection in the x -axis and a vertical stretch by a factor of 3, followed by a translation 4 units down and 1 unit right of the graph of $f(x) = |x|$. $f(x) = -3|x-1|-4$

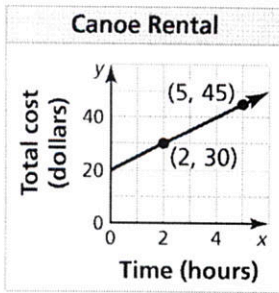
12) Which of the following is a quadratic function?

- (1) $g(x) = \log_3 x$ (2) $g(x) = 3^x$ (3) $g(x) = x^3$ (4) $g(x) = x^2 + 2x$

13. Write an equation of the line and interpret the slope and y-intercept

$$\frac{\Delta y}{\Delta x} = \frac{1300 - 800}{10 - 20} = \frac{500}{-10}$$

$$m = \frac{-50}{1}$$



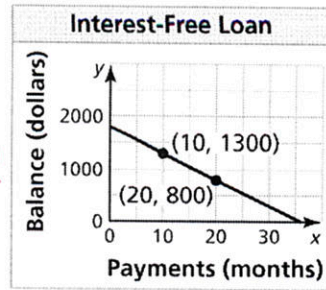
$$\frac{\Delta y}{\Delta x} = \frac{30 - 45}{2 - 5} = \frac{-15}{-3} = 5$$

means \rightarrow Canoe rental costs \$5 more per hour

$$y - 30 = 5(x - 2)$$

$$y - 30 = 5x - 10$$

$$y = 5x + 20$$

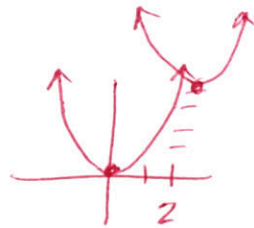


Loan goes down \$50 each month you pay

14) Based on the equations given below, identify each type of graph

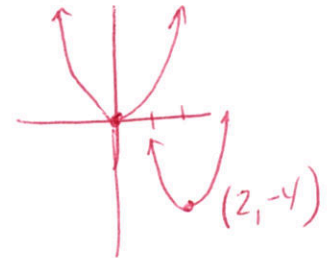
- | | | | |
|--------------------|--|---------------------------|-----------------------|
| a) $y = 3\sqrt{x}$ | <u>Square root</u> | e) $ x - y = 3$ | <u>Absolute value</u> |
| b) $y = x^2 - 9$ | <u>Quadratic</u> | f) $x + y = 4$ | <u>linear</u> |
| c) $y = x^3$ | <u>Cubic</u> | g) $y = \frac{2}{x}$ | <u>reciprocal</u> |
| d) $x = y^2 + 4y$ | Side way
<u>Parabola</u> | h) $x^2 + (y - 1)^2 = 25$ | <u>Circle</u> |

15) If the parent graph of $f(x) = x^2$ is moved to the new graph of $g(x) = (x - 2)^2 + 4$
What is the new minimum point on the graph $g(x)$?



- (1) (-2, 4) (2) (-2, -4) (3) (2, -4) (4) (2, 4)

16) If the parent graph of $f(x) = x^2$ is moved to the new graph of $g(x) = (x - 2)^2 - 4$
What is the new minimum point on the graph $g(x)$?



- (1) (-2, 4) (2) (-2, -4) (3) (2, -4) (4) (2, 4)

17) Which of the following is a cubic function?

- (1) $g(x) = \log_3 x$ (2) $g(x) = 3^x$ (3) $g(x) = x^3$ (4) $g(x) = x^2 + 2x$



18) Which of the following is an exponential function?

- (1) $g(x) = \log_3 x$ (2) $g(x) = 3^x$ (3) $g(x) = x^3$ (4) $g(x) = x^2 + 2x$



Solve the system. Check your solution, if possible.

19. $x + y + 3z = -4$
 $-x - y - 2z = 5$
 $2x - z = -3$
 $2x - z = -3$

> drop "y"
 $x + y + 3z = -4$
 $-x - y - 2z = 5$
 \oplus

$z = 1$
 $z = 1$

$2x - z = -3$
 $2x - (1) = -3$

$2x = -2$
 $x = -1$

$x + y + 3z = -4$
 $(-1) + (y) + 3(1) = -4$
 $-1 + y + 3 = -4$
 $y + 2 = -4$
 $y = -6$

20. $x - 3y - z = -9$
 $-2x + y + 2z = 3$
 $2x + y + 3z = 8$

$\left[\begin{array}{ccc|c} 1 & -3 & -1 & -9 \\ -2 & 1 & 2 & 3 \\ 2 & 1 & 3 & 8 \end{array} \right]$

$2x - 6y - 2z = -18$
 $-2x + y + 2z = 3$

$-5y = -15$
 $y = 3$

$-2x + y + 2z = 3$
 $\oplus 2x + y + 3z = 8$

$2y + 5z = 11$
 $2(3) + 5z = 11$
 $6 + 5z = 11$
 $5z = 5$
 $z = 1$

$2x + y + 3z = 8$
 $2x + 3 + 3(1) = 8$
 $2x + 6 = 8$
 $2x = 2$
 $x = 1$

21. The table below shows the height of a football over time after it has been kicked in the air. What type of function can you use to model the data? Estimate the height of the football after 8 seconds.

Time (seconds), x	0	1	2	3	4	5
Height (feet), y	3	52	87	108	115	108

Linear Model

Stat Edit L1, L2
 Stat Calc (4)

$y = 21x + 26.33333333$
 $y = 21(8) + 26.33333333$
 $y = 194.3333$ about 194 ft

Extra on a Sticker

10 Solve the following system of equations algebraically for all values of x , y , and z :

$$\begin{cases} x + 3y + 5z = 45 \\ 6x - 3y + 2z = -10 \\ -2x + 3y + 8z = 72 \end{cases}$$

$$\begin{array}{r} x + 3y + 5z = 45 \\ 6x - 3y + 2z = -10 \\ \hline 7x + 7z = 35 \end{array}$$

$$\begin{array}{r} 6x - 3y + 2z = -10 \\ -2x + 3y + 8z = 72 \\ \oplus \quad \hline 4x + 10z = 62 \end{array}$$

$$\begin{array}{r} -10(7x + 7z = 35) \\ 7(4x + 10z = 62) \\ \hline \end{array}$$

$$\begin{array}{r} -70x - 70z = -350 \\ \oplus \quad 28x + 70z = 434 \\ \hline \end{array}$$

$$\begin{array}{r} -42x = 84 \\ \hline -42 \quad -42 \\ \hline \end{array} \quad \boxed{x = -2}$$

$$\begin{array}{r} 7x + 7z = 35 \\ 7(-2) + 7z = 35 \\ -14 + 7z = 35 \\ \quad \quad \quad +14 \\ \hline \end{array}$$

$$\frac{7z}{7} = \frac{49}{7} \quad \boxed{z = 7}$$

$$\boxed{\begin{array}{l} x = -2 \\ y = 4 \\ z = 7 \end{array}}$$

$$\begin{array}{r} x + 3y + 5z = 45 \\ (-2) + 3y + 5(7) = 45 \\ -2 + 3y + 35 = 45 \\ 3y + 33 = 45 \\ \quad \quad \quad -33 \\ \hline 3y = 12 \\ \hline \end{array} \quad \boxed{y = 4}$$