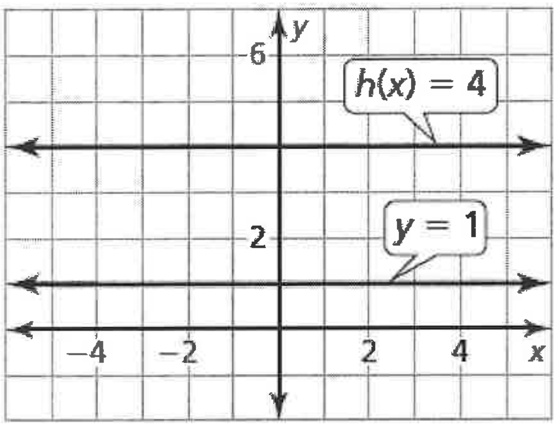
ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 1 Chapter Rev 1-27 ALL EVEN Show Solı

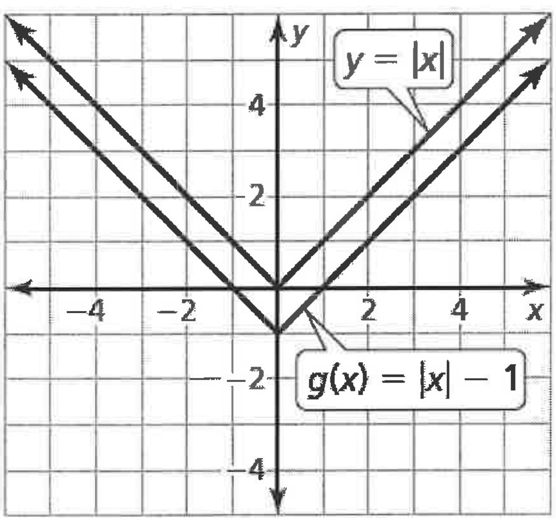
ODD

1.



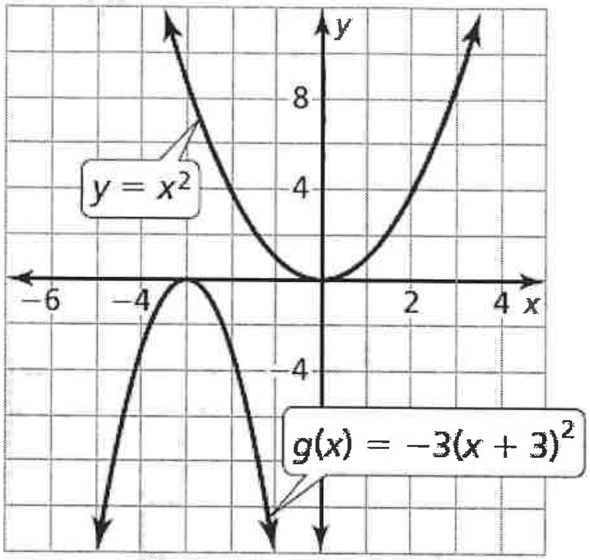
The graph of h is a translation 3 units up of the parent constant function.

3.



The graph of g is a translation 1 unit down of the parent absolute value function.

5.



The graph of g is a vertical stretch by a factor of 3 followed by a reflection in the x-axis and translation 3 units left of the parent quadratic function.

7. The graph of g is a vertical translation 4 units up of the graph of f. The graph of g is a horizontal translation 2 units left of the graph of f.

9. The graph of g is a vertical translation 1 unit down and a horizontal translation 2 units left of the graph of f.

11.

x	0	8	20	36	50
$f(x)$	0	76	190	342	475

$$m = \frac{76 - 0}{8 - 0} = \frac{76}{8} = \frac{19}{2} = 9.5$$

$$m = \frac{190 - 76}{20 - 8} = \frac{114}{12} = 9.5$$

$$m = \frac{342 - 190}{36 - 20} = \frac{152}{16} = 9.5$$

$$m = \frac{475 - 342}{50 - 36} = \frac{133}{14} = 9.5$$

There is a constant rate of change of 9.5 So, a linear function can be used to model the data. A linear function is $f(x) = 9.5x + 0 = 9.5x$.

One minute equals 60 seconds.

$f(60) = 9.5(60) = 570$

After 1 minute, the space probe traveled about 570 miles.

13. Step 1 First write a function h that represents the reflection of f.

$$\begin{aligned} h(x) &= -f(x) \\ &= -|x| \end{aligned}$$

Step 2 Then write a function g that represents the translation 4 units left of h.

$$\begin{aligned} g(x) &= h(x + 4) \\ &= -|x + 4| \end{aligned}$$

The transformed function is $g(x) = -|x + 4|$.

15. A vertical shrink by a factor of $\frac{1}{2}$ multiplies each output value by $\frac{1}{2}$ and a translation 2 units up is a vertical translation and adds 2 to the output value.

$$
\begin{aligned}
g(x) &= \tfrac{1}{2}f(x) + 2 \\
&= \tfrac{1}{2}\left(|x+1| - 2\right) + 2 \\
&= \tfrac{1}{2}|x+1| - 1 + 2 \\
&= \tfrac{1}{2}|x+1| + 1
\end{aligned}
$$

17. $m = \dfrac{165 - 0}{3 - 0} = \dfrac{165}{3} = 55$

There is a constant rate of change of 55 and a y-intercept of 0. So, an equation of the line is $y = 55x + 0 = 55x$. The distance is increasing at the rate of 55 miles per hour.

19. Having traveled 3.5 miles in 10 minutes corresponds to the point (10, 3.5) and traveling 10.5 miles in 30 minutes corresponds to the point (30, 10.5). Write an equation of the line that passes through the points (10, 3.5) and (30, 10.5). First, find the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{10.5 - 3.5}{30 - 10} = \frac{7}{20} = 0.35$$

Use point-slope form to write an equation.
Use $(x_1, y_1) = (10, 3.5)$.

$$y - y_1 = m(x - x_1)$$
$$y - 3.5 = 0.35(x - 10)$$
$$y - 3.5 = 0.35x - 3.5$$
$$y = 0.35x$$

Use the equation to estimate how far you ride your bike in 45 minutes.

$$y = 0.35(45)$$
$$= 15.75$$

After 45 minutes of riding your bike, you have traveled 15.75 miles.

21. An equation of the line of best fit is $y = 46.314x + 175$. The number of tickets sold is increasing at the rate of 46,314 per year. The number of tickets sold initially was 175,000.

$$y = 46.314(12) + 175 \approx 730.768$$

The number of tickets sold in the 12th year will be approximately 703,768 tickets.

23. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} 2x - 5y - \quad z = 17 \\ 5x + 5y + 15z = 95 \\ \hline 7x + 14z = 112 \\ x + 2z = 16 \end{array}$$

$$\begin{array}{r} -6x - 6y - 18z = -114 \\ -4x + 6y + \quad z = \quad -20 \\ \hline -10x - 17z = -134 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} 10x + 20z = 160 \\ -10x - 17z = -134 \\ \hline 3z = 26 \\ z = \frac{26}{3} \end{array}$$

$$x + 2\left(\frac{26}{3}\right) = 16$$

$$x = -\frac{4}{3}$$

Step 3 Substitute $x = -\frac{4}{3}$ and $z = \frac{26}{3}$ into an original equation and solve for x.

$$x + y + 3z = 19$$

$$-\frac{4}{3} + y + 3 \cdot \frac{26}{3} = 19$$

$$y = -\frac{17}{3}$$

The solution is $\left(-\frac{4}{3}, -\frac{17}{3}, \frac{26}{3}\right)$.

25. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} x + 4y - 2z = 3 \\ -x - 3y - 7z = -1 \\ \hline y - 9z = 2 \end{array}$$

$$\begin{array}{r} -2x - 8y + 4z = -6 \\ 2x + 9y - 13z = 2 \\ \hline y - 9z = -4 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} y - 9z = 2 \\ -y + 9z = 4 \\ \hline 0 = 6 \end{array}$$

Because you obtain a false equation, the system has no solution.

27. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} -3x - 3y - 3z = -18 \\ 3x + 3y + 4z = 28 \\ \hline z = 10 \end{array}$$

$$x + 2z = 4$$
$$x + 2(10) = 4$$
$$x = -16$$

Step 2 Substitute $x = -16$ and $z = 10$ into an original equation and solve for y.

$$x + y + z = 6$$
$$-16 + y + 10 = 6$$
$$y = 12$$

The solution is $(-16, 12, 10)$.