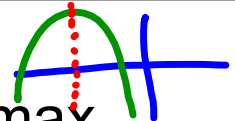


Warm up:

Find the vertex, axis of symmetry, min/max value, domain, and range of the following function.



$$g(x) = -x^2 - 8x + 9$$

vertex $(-4, 25)$
 axis of symmetry $x = -4$
 max = 25
 $D = \{x : x \in \mathbb{R}\}$
 $R = \{y : y \leq 25\}$

$$-\frac{b}{2a} = -\frac{-8}{2(-1)} = -\frac{-8}{-2} = -4$$

$$g(-4) = -(-4)^2 - 8(-4) + 9 = 25$$

$$\begin{array}{r} -16 + 32 + 9 \\ 16 + 9 \end{array}$$

Functions Quiz

(21)

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

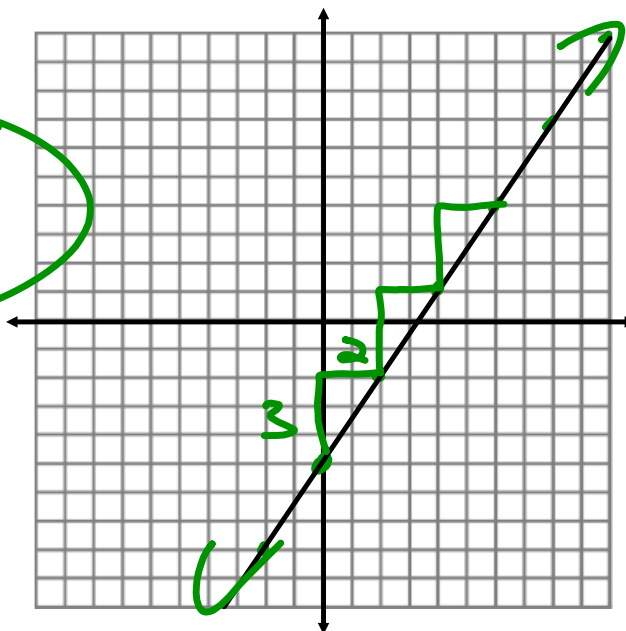
$$f(-3) = 4(-3) - 5$$

$$-12 - 5$$

$$\textcircled{-17}$$

Q3

$$y = \frac{3}{2}x - 5$$



$$\textcircled{14} \quad y = -\frac{5}{3}x + b \quad \begin{matrix} (6, 2) \\ x \quad y \end{matrix}$$
$$2 = -\frac{5}{3}(6) + b$$
$$2 = -10 + b$$
$$\begin{array}{r} +10 \quad +10 \\ \hline 12 = b \end{array}$$
$$y = -\frac{5}{3}x + 12$$

⑩

$$y = \frac{1}{4}x + b$$

$$3 = \frac{1}{4}(-8) + b$$

$$3 = -2 + b$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$5 = b$$

$$y = \frac{1}{4}x + 5$$

(22)

$$g(-5)$$

$$(-5)^2 - 3$$

$$25 - 3$$

$$22$$

$$g(x) = x^2 - 3$$

$$(-5)(-5) = 25$$

$$\textcircled{24} \quad p(x) = 2x - 1$$

$$D = \{x : x \in \mathbb{R}\}$$

$$R = \{y : y \in \mathbb{R}\}$$

$$\textcircled{25} \quad f(x) = x^2 + 1$$

$$D = \{x : x \in \mathbb{R}\}$$

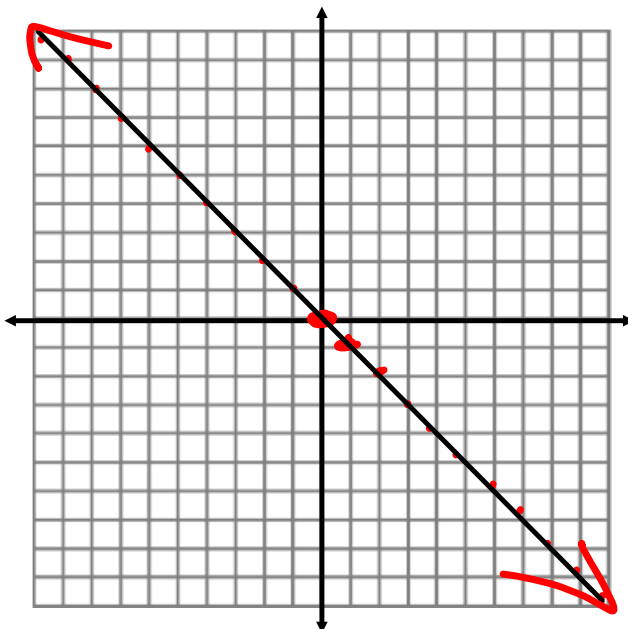
$$R = \{y : y \geq 1\}$$

⑬

$$y = -x$$

$$\text{slope} = -1 = -\frac{1}{1}$$

$$y\text{-int} = 0$$



$$\textcircled{17} \quad (7, 6) \quad (-5, -18)$$

$$\frac{\Delta y}{\Delta x} = \frac{6 - (-18)}{7 - (-5)} = \frac{24}{12} = 2$$

$$y = 2x + b$$

$$6 = 2(7) + b$$

$$\begin{array}{r} 6 = 14 + b \\ -14 \quad -14 \\ \hline -8 = b \end{array}$$

$$y = 2x - 8$$

$$\textcircled{6} \quad y = -3x + 9$$

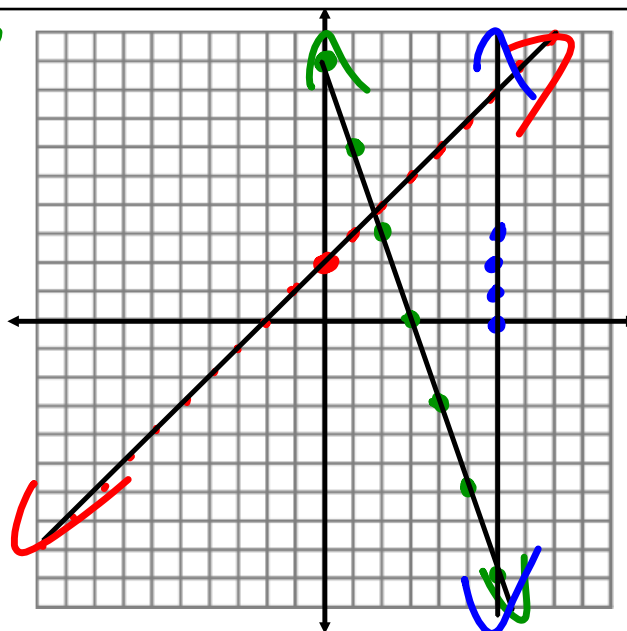
$$-3 = -\frac{3}{1}$$

$$\textcircled{9}$$

$$y = x + 2$$

$$\textcircled{10}$$

$$x = 6$$



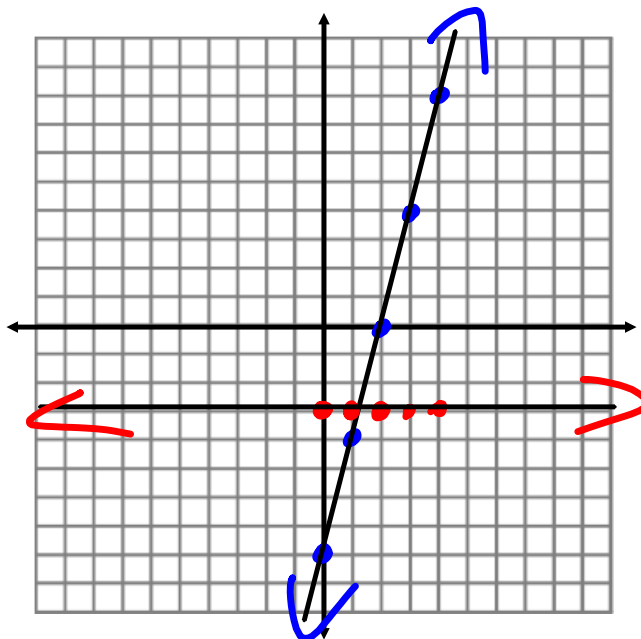
⑪

$$f(x) = 4x - 8$$

$$4 = \frac{4}{1}$$

⑫

$$y = -3$$



⑮

$$y = 2x + b$$

 $(12, 9)$

$$9 = 2(12) + b$$

$$9 = 24 + b$$

$$\begin{array}{r} -24 \quad -24 \\ \hline -15 = b \end{array}$$

$$y = 2x - 15$$

(19)

X	Y
3	8
5	14
7	20
9	26
11	32

$$\frac{\Delta y}{\Delta x} = \frac{14-8}{5-3} = \frac{6}{2} = 3$$

$$y = 3x + b$$

$$8 = 3(3) + b$$

$$8 = 9 + b$$

$$\begin{array}{r} -9 \\ \hline -1 = b \end{array}$$

$$y = 3x - 1$$

Showdown

$$f(x) = -2x^2 + 8x - 3$$

$$-\frac{b}{2a} = -\frac{8}{2(-2)} = -\frac{8}{-4} = -(-2) = 2$$

$$f(2) = -2(2)^2 + 8(2) - 3$$

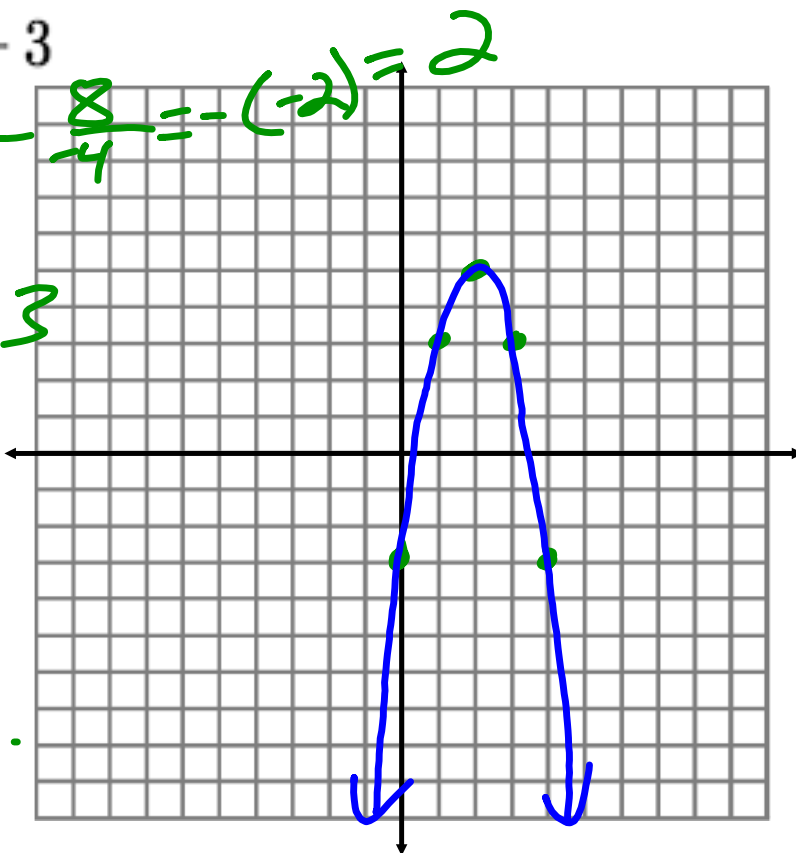
$$-8 + 16 - 3$$

$$8 - 3$$

$$(2, 5)$$

$$+2, +2, +2, \dots$$

$$2, 6, 10, \dots$$

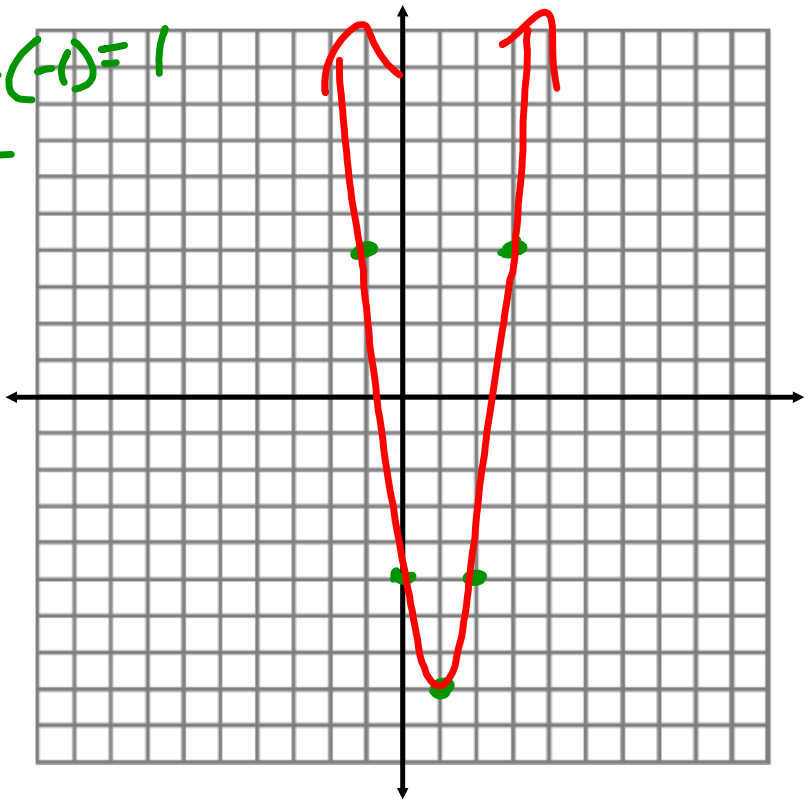


$$g(x) = 3x^2 - 6x - 5$$

$$-\frac{-6}{2(3)} = -\frac{-6}{6} = -(-1) = 1$$

$$g(1) = 3 - 6 - 5$$

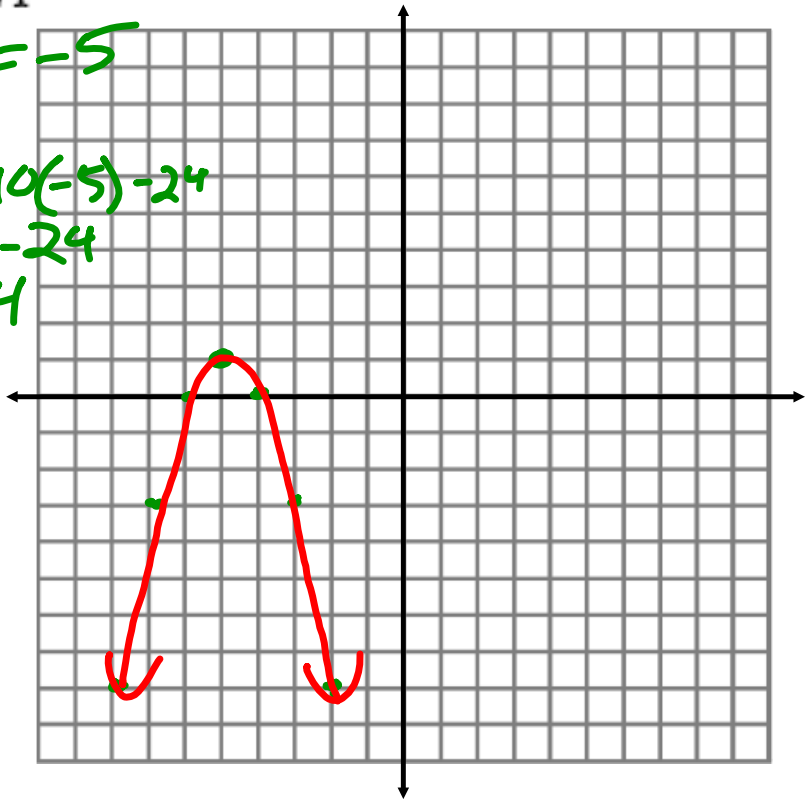
$$(1, -8)$$



$$T(x) = -x^2 - 10x - 24$$

$$-\frac{-10}{2(-1)} = -\frac{-10}{-2} = -5$$

$$\begin{aligned} T(-5) &= -(-5)^2 - 10(-5) - 24 \\ &= -25 + 50 - 24 \\ &= 25 - 24 \\ &= 1 \end{aligned}$$



$$q(x) = 2x^2 - 10x + 8 \quad \left(2\frac{1}{2}, -4\frac{1}{2}\right)$$

$$-\frac{-10}{2(2)} = -\frac{-10}{4} = \frac{10}{4} = \frac{5}{2}$$

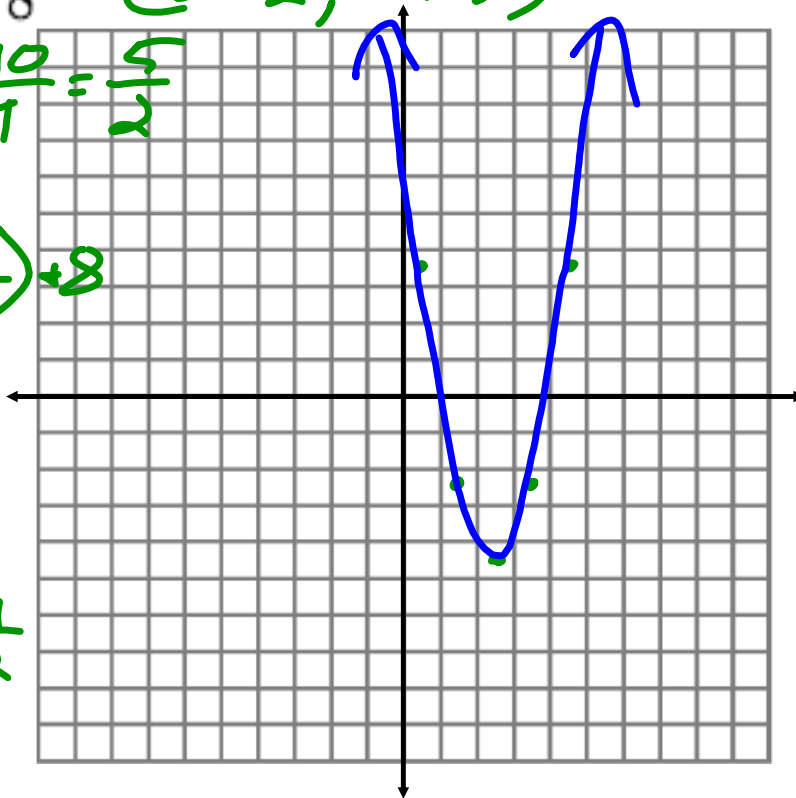
$$q\left(\frac{5}{2}\right)$$

$$2\left(\frac{5}{2}\right)^2 - 10\left(\frac{5}{2}\right) + 8$$

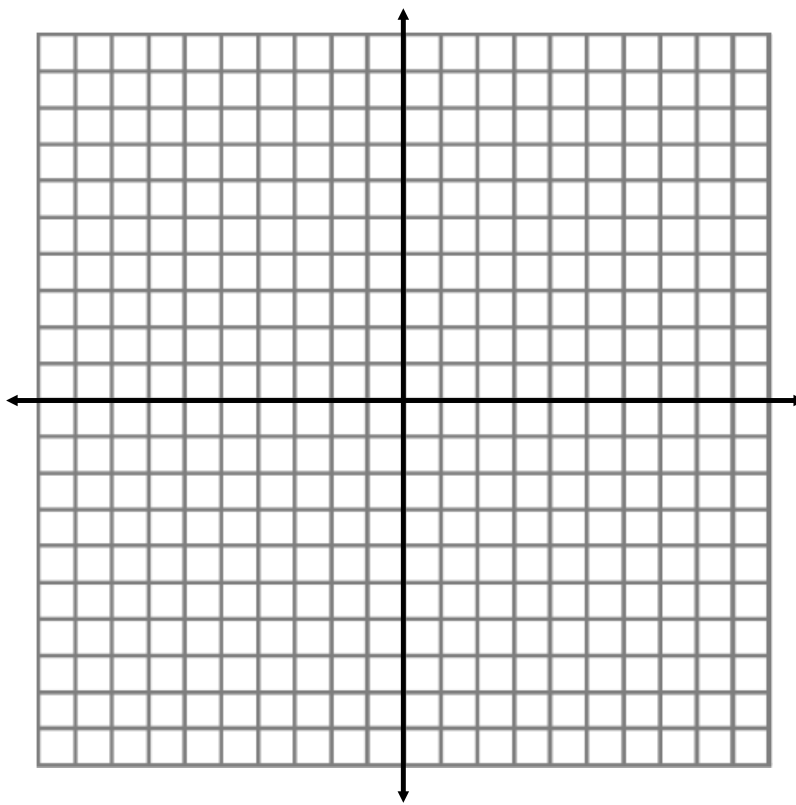
$$\frac{50}{4} - \frac{50}{2} + 8$$

$$12\frac{1}{2} - 25 + 8$$

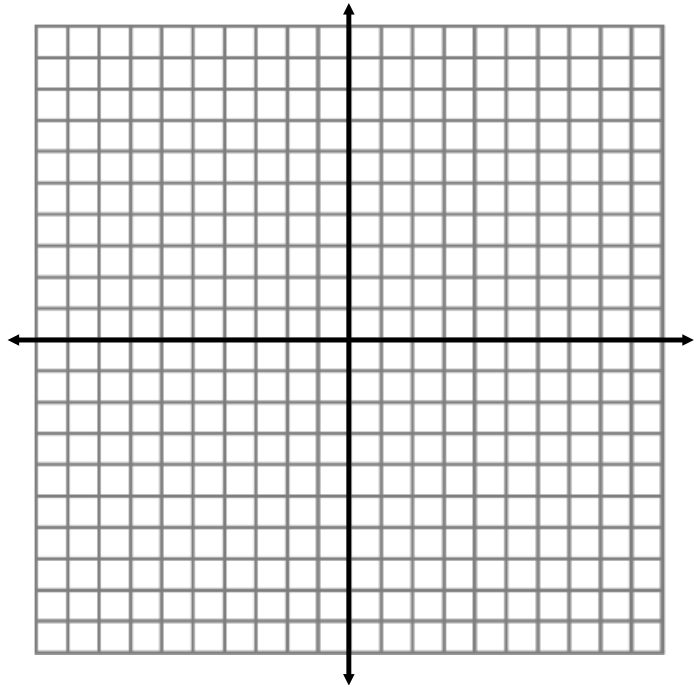
$$12\frac{1}{2} + 16 - 25 = -4\frac{1}{2}$$



$$b(x) = -4x^2 + 3$$



$$a(x) = 6x + 3x^2$$



February 7, 2022

