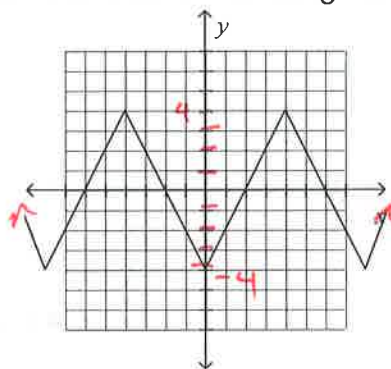


Solve the following. Be sure to show enough work so I can reproduce your results if necessary.

1. Determine the domain of the function $h(x) = \frac{\sqrt{3x+9}}{2x}$ Domain: $x \geq -3, x \neq 0$

2. Use the graph to determine the domain and range of the relation, and state whether the relation is a function.



2. D: all reals

R: $-4 \leq y \leq 4$

Function: yes or no

3. Let $f(x) = 2x^2 + 3x$, $g(x) = 6 - 5x$. Find $g(x) - f(x)$ $6 - 5x - (2x^2 + 3x)$
 $6 - 5x - 2x^2 - 3x = -2x^2 - 8x + 6$

4a. Given $f(x) = x^2 - 5$ and $g(x) = \sqrt{x-4}$ Find $g(f(-3))$

$f(-3) = (-3)^2 - 5 = 9 - 5 = 4$
 $g(4) = \sqrt{4-4} = \sqrt{0} = 0$

b. Find $f(g(x))$ and its domain.

$f(\sqrt{x-4}) = (\sqrt{x-4})^2 - 5 = x - 4 - 5 = x - 9$
Domain: $x \geq 4$

5. Find the x- and y-intercepts and use them to graph $6x + 3y = -18$

$6x + 3y = -18$

x-int ($y=0$)

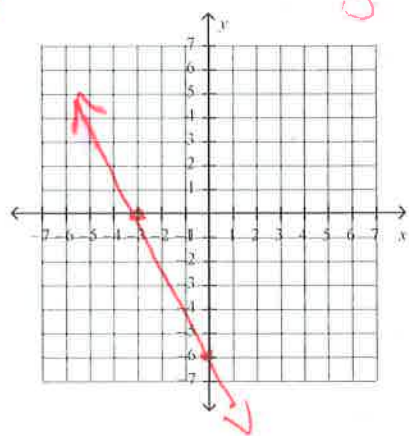
$\frac{6x}{6} = \frac{-18}{6}$

$x = -3$

y-int ($x=0$)

$\frac{3y}{3} = \frac{-18}{3}$ $y = -6$

x-int $(-3, 0)$ y-int $(0, -6)$



6. Write an equation for a line in standard form that is perpendicular to the graph of $y = 7x - 9$ and passes through the point at $(-1, 3)$.

$y - 3 = -\frac{1}{7}(x + 1)$
 $7(y - 3) = -x - 1$
 $7y - 21 = -x - 1$
 $+x + 21$ $+x + 21$
 $x + 7y = 20$ $m = -\frac{1}{7}$

7. Find an equation of the line in slope-intercept form that is parallel to the graph of $5x - 4y = 8$ that passes through the point at $(2, 7)$.

$m = \frac{-5}{-4} = \frac{5}{4}$

$y - 7 = \frac{5}{4}(x - 2)$

$y - 7 = \frac{5}{4}x - \frac{5}{2}$
 $+7$ $+7$

$y = \frac{5}{4}x + \frac{9}{2}$ or $y = \frac{5}{4}x + 4.5$

8. A car that sold for \$18,600 new in 1993 is valued at \$6000 in 1999. Find the slope of the line through the points at (1993, 18,600) and (1999, 6000). What does this slope represent? Be specific.

$$m = \frac{18,600 - 6,000}{1993 - 1999} = \frac{12,600}{-6} = -2100 \text{ value/yr.}$$

8a) $m = -2100$

b) Means the car is losing \$2100 in value each year

9. The chart below shows the years of work experience of eight administrative assistants at Morris and Company and their hourly wage. Enter the data into your calculator.

| | | | | | | | | | |
|---------------------|---|---|----|----|----|----|----|----|----|
| Years of Experience | 4 | 8 | 10 | 14 | 15 | 16 | 20 | 25 | 30 |
| Hourly Wage (\$) | 8 | 9 | 10 | 11 | 12 | 11 | 14 | 15 | ? |

Find the line of best fit $y = .35x + 6.39$ and the correlation coefficient = $.9787$ to 4 places. Use the graph and trace feature of your calculator to predict the missing value. Based on the correlation coefficient (r-value), explain why the prediction is or is not reliable.

9. 16.8 , This prediction is reliable because the r-value correlation coefficient is close to 1.

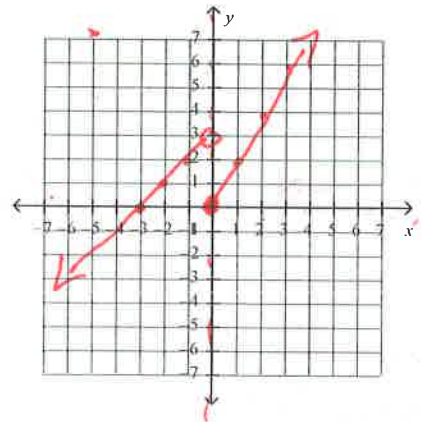
10. Graph $f(x) = \begin{cases} x+3 & \text{if } x < 0 \\ 2x & \text{if } x \geq 0 \end{cases}$

$y = x + 3, x < 0$

| x | y |
|----|---|
| 0 | 3 |
| -1 | 2 |
| -2 | 1 |
| -3 | 0 |

$y = 2x, x \geq 0$

| x | y |
|---|---|
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |



Graph the following inequalities.

11. $2x - 3y \geq 12$

x-int (y=0)

$2x = 12$

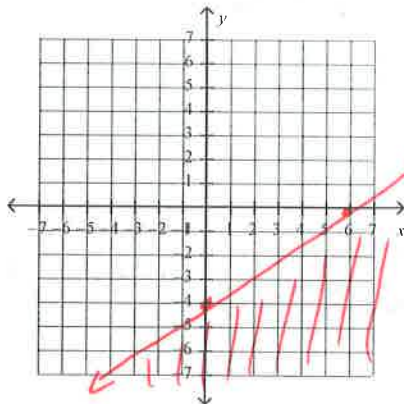
$x = 6$

y-int (x=0)

$-3y = 12$

$-3 \overline{-3} \overline{-3}$

$y = -4$



Test (0, 0)

$2(0) - 3(0) \geq 12$

$0 \geq 12$ false

12. $-2 < x - 2y \leq 4$

$-2 < x - 2y$

x-int -2

y-int 1

$-2 < 0 - 2(0)$

$-2 < 0$ True

$x - 2y \leq 4$

x-int = 4

y-int = -2

Test $0 - 2(0) \leq 4$

$0 \leq 4$ true

