

1. State the domain and range of the relation.

$$\{(5, 4), (3, -2), (5, -2)\}$$

Domain: $\{3, 5\}$ Range: $\{-2, 4\}$

2. Is the relation in problem 1 a function? Explain why or why not.

No, it is not a function because the domain value of 5 is paired with more than one range value.

3. The equation of a line is $4x + 3y = 15$. $\rightarrow \begin{aligned} 3y &= -4x + 15 \\ y &= -\frac{4}{3}x + 5 \end{aligned}$

- a) The ordered pair of the x-intercept of the line is $(3.75, 0)$

$$\begin{aligned} 4x + 3(0) &= 15 \\ 4x &= 15 \\ x &= 3.75 \end{aligned}$$

- b) The slope of a line parallel to the above line is $-\frac{4}{3}$

- c) The slope of a line perpendicular to the above line is $\frac{3}{4}$

4. Write the equation of a line in slope-intercept form that has a slope of $\frac{2}{3}$ and contains $(-4, 7)$.

$$y - 7 = \frac{2}{3}(x + 4)$$

$$7 + \frac{8}{3} = \frac{21}{3} + \frac{8}{3} = \frac{29}{3}$$

$$y - 7 = \frac{2}{3}x + \frac{8}{3}$$

$$\boxed{y = \frac{2}{3}x + \frac{29}{3}}$$

5. Write the equation of a line in slope-intercept form that contains $(-2, 5)$ and $(-3, 8)$.

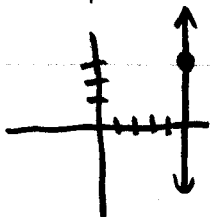
$$m = \frac{8-5}{-3-2} = \frac{3}{-1} = -3$$

$$y - 5 = -3(x + 2)$$

$$y - 5 = -3x - 6$$

$$\boxed{y = -3x - 1}$$

6. Write an equation of a line that has no slope and contains $(5, 3)$.



undefined

$$\boxed{x = 5}$$

7. Morgan can type 174 words in 3 minutes. After 6 minutes, she had typed 348 words. Write a linear model to represent the number of words, y , that Morgan can type in x minutes.

$$(3, 174)(6, 348)$$

$$m = \frac{348 - 174}{6 - 3} = \frac{174}{3} = 58$$

$$y - 174 = 58(x - 3)$$

$$y - 174 = 58x - 174$$

$$\boxed{y = 58x}$$

8. Use the linear model from problem 7 to predict the number of words that Morgan can type in 8 minutes.

$$y = 58(8)$$

$$\boxed{y = 464 \text{ words}}$$

9. Write an equation for an absolute value function that

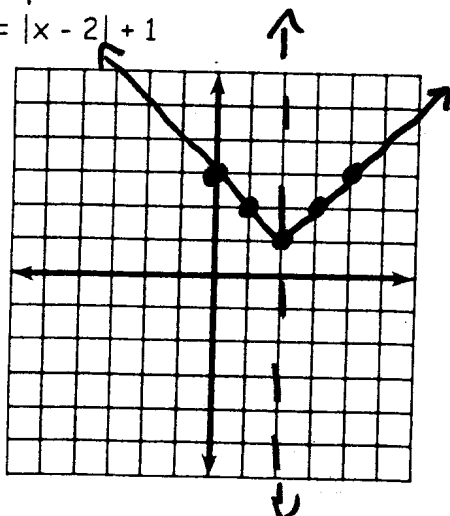
a) opens downward and has a vertex of $(7, -2)$ $y = -|x - 7| - 2$

b) translates 5 units to the right and 4 units up from the parent function $y = |x - 5| + 4$

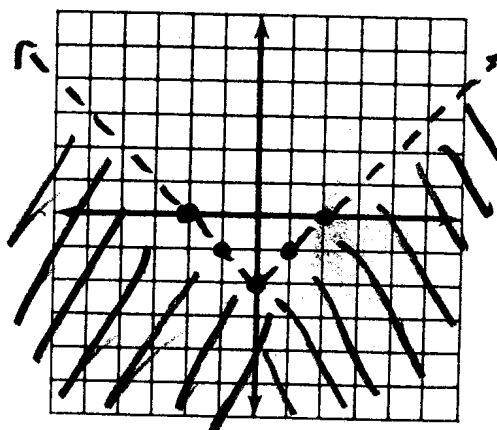
10. Graph.

a) $y = |x - 2| + 1$

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



b) $y < |x| - 2$



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

Solve.

11. Find three consecutive even integers where ten less than the first integer is the same as the sum of the second and third integers.

1st x

2nd $x + 2$

3rd $x + 4$

$$x - 10 = x + 2 + x + 4$$

$$x - 10 = 2x + 6$$

$$-10 = x + 6$$

$$-16 = x$$

$$\boxed{-16, -14, -12}$$

12. If two angles are complementary, then the complement is nine degrees more than twice the original angle.

1st x

2nd $2x + 9$

$$x + 2x + 9 = 90$$

$$3x + 9 = 90$$

$$3x = 81$$

$$x = 27$$

$$\boxed{27^\circ, 63^\circ}$$