

Please show all work for partial credit.

1. Evaluate the following expression:

$$\begin{aligned} & -(-2-12) - |-15-3| \\ & -(-14) - |-18| \\ & 14 - 18 \\ & \boxed{-4} \end{aligned}$$

2. Evaluate the following expression:

$$\begin{aligned} & 13.68 - (-3.2-5)^2 \\ & 13.68 - (-8.2)^2 \\ & 13.68 - 67.24 \\ & \boxed{-53.56} \end{aligned}$$

3. Evaluate the following expression if $x = -2$ and $y = -3$

$$\begin{aligned} & \frac{2x^2 - 7y^3}{-x} \\ & \frac{2(-2)^2 - 7(-3)^3}{-(-2)} = \frac{2(4) - 7(-27)}{2} \\ & = \frac{8 + 189}{2} = \boxed{\frac{197}{2}} \end{aligned}$$

4. Simplify: $6x - [3 - (-3 + 5x) - 5x]$

$$\begin{aligned} & 6x - [3 + 3 - 5x - 5x] \\ & 6x - [6 - 10x] \\ & 6x - 6 + 10x \\ & \boxed{16x - 6} \end{aligned}$$

5. Matching: Match the letter of each property to the example.

- a) $3x + 5 = 5 + 3x$ C ✓ A. Multiplication Property of Zero
- b) $0 \cdot 5 = 0$ A B. Multiplication Property of One.
- c) $a(b + c) = ab + ac$ G ✓ C. Commutative Property of Addition
- d) $1 \cdot y = y$ B D. Commutative Property of Multiplication
- e) $(x + 2) + y = x + (2 + y)$ E ✓ E. Associative Property of Addition
- f) $(3x)y = y(3x)$ D F. Associative Property of Multiplication
- g) $(2x)y = 2(xy)$ F G. Distributive Property

6. Solve the equation: $2x - 5(x - 2) = 20 - (2x + 6) - 3x$

$$2x - 5x + 10 = 20 - 2x - 6 - 3x$$

$$-3x + 10 = 14 - 5x$$

$$2x = 4$$

$$\boxed{x = 2}$$

7. Solve for x : $\left(\frac{1}{5}x - 1 = \frac{7}{10}\right) 10$

$$2x - 10 = 7$$

$$2x = 17$$

$$x = \frac{17}{2}$$

8. After a 35% price reduction, a new CD player was on sale for \$617.50. What was the original price of the CD player?

$$x - .35x = 617.50$$

Let x = original price

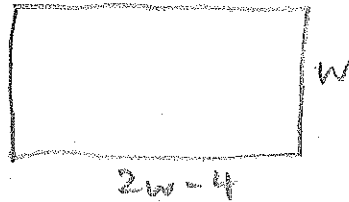
then $.35x$ = price reduction

$$.65x = 617.50$$

$$x = \$950$$

It originally cost \$950.

9. The length of a rectangle is 4 less than two times the width. If the perimeter is 64 inches, what are the dimensions of the rectangle?



The rectangle is 12" x 20".

Let w = width, then

$$2w - 4 = \text{length}$$

$$P = 64''$$

$$2w + 2(2w - 4) = 64$$

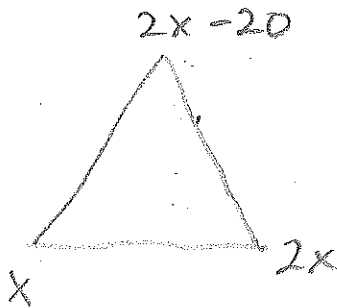
$$2w + 4w - 8 = 64$$

$$6w = 72$$

$$w = 12''$$

$$l = 20''$$

10. The second angle of a triangle is twice as large as the first. The third angle is 20° less than the second angle. What is the measure of each angle?



$$x + 2x + 2x - 20 = 180$$

$$5x = 200$$

$$x = 40^\circ$$

$$2x = 80^\circ$$

$$2x - 20 = 60^\circ$$

11. Solve for y . $ax + by = c$

$$by = c - ax$$

$$y = \frac{c - ax}{b}$$

12. Solve the following inequality. Write the answer in set-builder notation and graph.

$$3(5 - 2x) - 3 \leq 5(x - 6) + 7$$

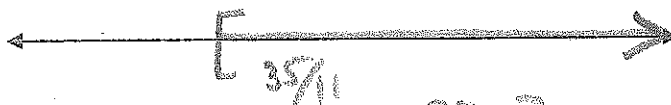
$$15 - 6x - 3 \leq 5x - 30 + 7$$

$$-6x + 12 \leq 5x - 23$$

$$-11x \leq -35$$

$$x \geq \frac{35}{11}$$

Graph:



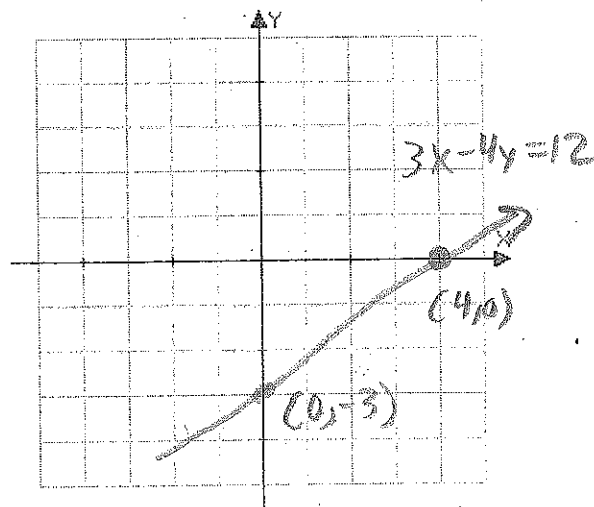
Set-builder notation

$$\{x \mid x \geq \frac{35}{11}\}$$

13. Find the x and y -intercepts and then ~~graph~~ sketch the graph of $3x - 4y = 12$.

x -intercept $(4, 0)$

y -intercept $(0, -3)$



14. Find the slope and y-intercept of the line given by $-4x + 3y = 12$

$$3y = 4x + 12$$

$$y = \frac{4}{3}x + 4$$

$$m = \frac{4}{3}$$

$$y\text{-int} = (0, 4)$$

15. Find the slope of the line containing the points $(3, -2)$ and $(-1, 6)$.

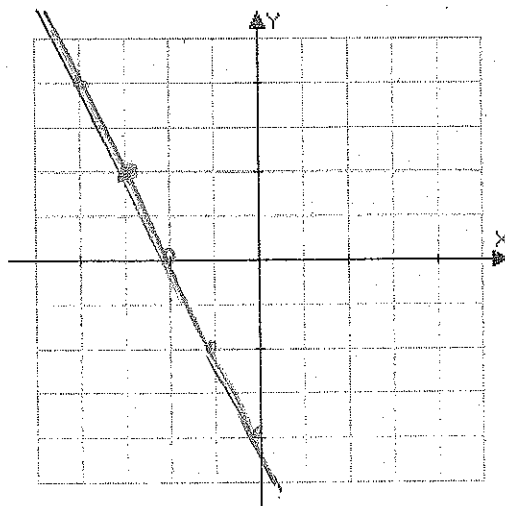
$$m = \frac{6 - (-2)}{-1 - 3} = \frac{8}{-4} = -2$$

16. Write an equation of a line with slope $m = -3$ and containing the point $(-3, 4)$.

$$y - 4 = -3(x + 3)$$

17. a) Draw the line with slope -2 which contains the point $(-3, 2)$.

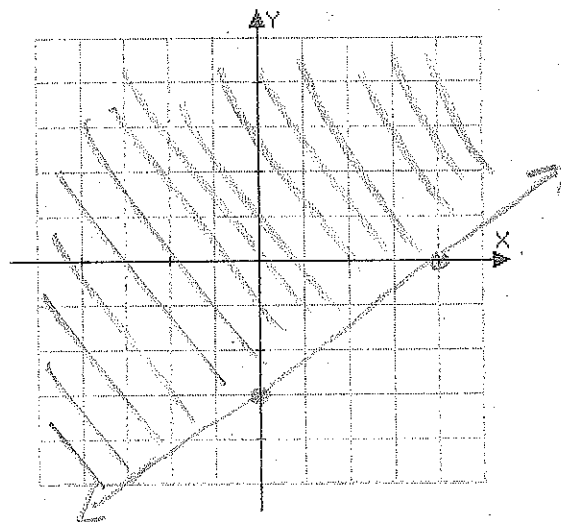
b) Write an equation of the line here: $y - 2 = -2(x + 3)$



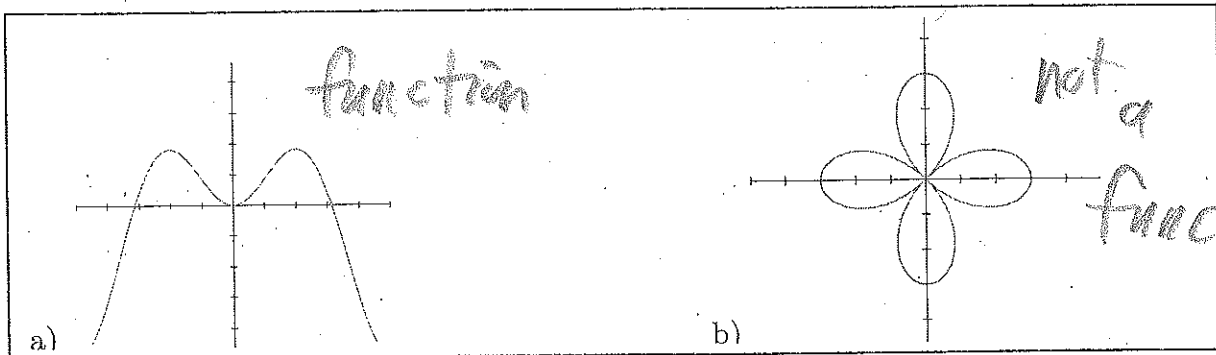
18. Graph the inequality $3x - 4y \leq 12$

$(0, -3)$

$(4, 0)$



19. Use the Vertical Line Test to determine if the graph is a function.



20. Let $f(x) = 3x^2 - x + 1$ and $g(x) = -x^2 - x - 5$. Find the following:

a) $f(-1)$

$$f(-1) = 3(-1)^2 - (-1) + 1$$

$$= 3 + 1 + 1$$

$$f(-1) = 5$$

b) $g(-3)$

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

$$= -9 + 3 - 5$$

$$= -6 - 5$$

$$= -11$$

$$g(-3) = -11$$