

Directions: Always show all work and circle your answer.

1. Find the output of the function $f(x) = 2x^2 - 5x$ if the input is -10.

$$f(-10) = 2(-10)^2 - 5(-10)$$

$$= 2(100) + 50$$

$$\boxed{250}$$

2. Find the value of x of the function $f(x) = 5x + 10$ if the output is -5.

$$-5 = 5x + 10$$

$$-15 = 5x$$

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

3. Use the function $f(x) = \frac{12}{2x+1}$ to answer the following.

- a. Find $f(-3)$

$$f(-3) = \frac{12}{2(-3)+1} = \frac{12}{-5}$$

- b. Find x when $f(x) = 2$.

$$\frac{12}{2x+1} = 2$$

$$4x+2 = 12$$

$$4x = 10$$

$$\boxed{x = \frac{5}{2}}$$

4. Use the function $f(x) = \sqrt{3-x}$ to find $f(4)$

$$f(4) = \sqrt{3-4} = \sqrt{-1} = \text{undefined}$$

5. Draw a **complete** graph of $y = x^2 + 2$.

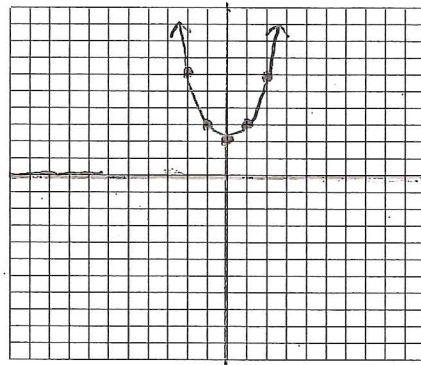
Plot at least 5 points where x and y are both integers.

Smallest x : $-\infty$ Largest x : ∞

Domain: \mathbb{R}

Smallest y : 2 Largest y : ∞

Range: $y \geq 2$



0	2
1	3
2	6
-1	3
-2	6

Use a calc. to see the graph & table and to find x & y intercepts, if possible.

10	1
9	2
6	3
1	4

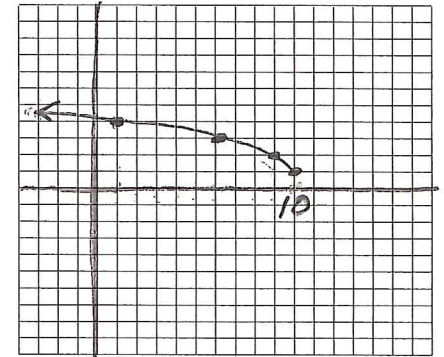
6. Draw a **complete** graph of $y = \sqrt{10-x} + 1$. Plot at least 4 points where x and y are integers.

Smallest x : $-\infty$ Largest x : 10

Domain: $x \leq 10$

Smallest y : 0 Largest y : ∞

Range: $y \geq 0$



7. Larry is working part time and saving money for college. He now has \$500 in his savings account and is adding \$120 each month.

Define 2 variables for this situation:

Let $x =$ Time (months) Let $y =$ Savings (\$)

Write an equation that represents this situation: $y = 500 + 120x$

If Larry saves for 10 more months, how much money will he have in savings?

$$y = 500 + 120(10)$$

$$= 500 + 1200$$

$$= \boxed{\$1700}$$

How long will it take for Larry to have \$2540?

$$2540 = 500 + 120x$$

$$2040 = 120x$$

$$\boxed{x = 17 \text{ months}}$$

8. A contestant on the TV show *The Biggest Loser* weighed 400 pounds at the start of the show. Each week he was able to lose 7.5 pounds.

Define 2 variables for this situation:

Let $x =$ Time (weeks) Let $y =$ Weight (lbs)

Write an equation that represents this situation: $y = 400 - 7.5x$

How much will the contestant weigh after 12 weeks?

$$y = 400 - 7.5(12)$$

$$= 400 - 90$$

$$= \boxed{310 \text{ lbs}}$$

How long will it take for the contestant to weigh 295 pounds?

$$295 = 400 - 7.5x$$

$$-105 = -7.5x$$

$$\boxed{x = 14 \text{ weeks}}$$

9. Annette was working on her Algebra 2 homework. She finished solving the equation below, but she made a mistake. Circle her mistake and explain what she did wrong and then solve the problem correctly below.

$$5x + 1 - (2x - 4) = -1$$

$$3x - 3 = -1$$

$$3x = 2$$

$$x = \frac{2}{3}$$

Explain Annette's mistake:

She didn't distribute the +1 with the -4 correctly

Now solve the problem correctly (Show All Steps)

$$5x + 1 - (2x - 4) = -1$$

$$5x + 1 - 2x + 4 = -1$$

$$3x + 5 = -1$$

$$3x = -6$$

$$x = -2$$

10. On Vince's last test he finished solving the equation below but made a mistake. Circle his mistake and explain what he did wrong and then solve the problem correctly below.

$$3(x + 2) - 2(2x - 3) = 13$$

$$3x + 6 - 4x + 5 = 13$$

$$-1x + 11 = 13$$

$$x = -2$$

Explain Vince's mistake:

He wrote $-2 \cdot -3 = 5$ when distributing

Now solve the problem correctly (Show All Steps)

$$3(x + 2) - 2(2x - 3) = 13$$

$$3x + 6 - 4x + 6 = 13$$

$$-1x + 12 = 13$$

$$-1x = 1$$

$$x = -1$$

11. Solve: $\frac{x+1}{2} = \frac{6}{x}$

$$x(x+1) = 12$$

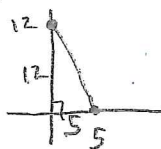
$$x^2 + x = 12$$

$$x^2 + x - 12 = 0$$

$$(x+4)(x-3) = 0$$

$$x = -4, x = 3$$

12. Find the distance between the points (0, 12) and (5, 0).



$$a^2 + b^2 = c^2$$

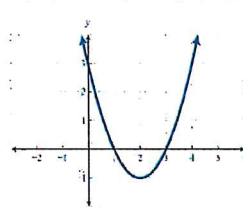
$$5^2 + 12^2 = c^2$$

$$25 + 144 = c^2$$

$$c^2 = 169$$

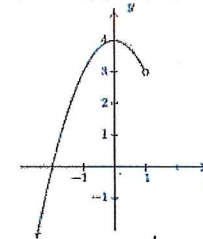
$$c = 13$$

13. State the domain and the range for each function below



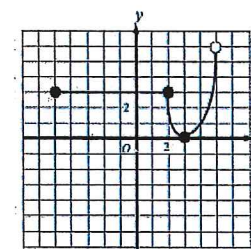
Domain: \mathbb{R}

Range: $y \geq -1$



Domain: $x < 1$

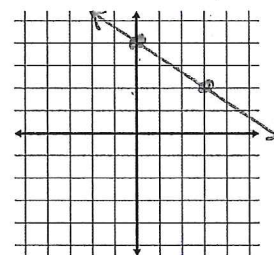
Range: $y \leq 4$



Domain: $-5 \leq x < 5$

Range: $0 \leq y < 6$

14. Graph $y = -\frac{2}{3}x + 4$

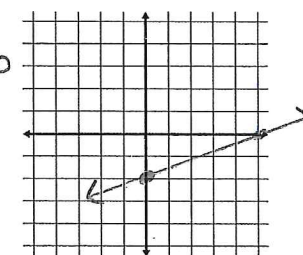


15. Rewrite $2x - 5y = 10$ in slope-intercept form and graph.

$$2x - 5y = 10$$

$$-5y = -2x + 10$$

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



16. The solution to the equation $2(x - 3) - 5x = 4x - (10 - 8x)$ is $x = \frac{4}{15}$. Solve this equation below and show step-by-step how this solution is obtained. You cannot substitute the given value $\frac{4}{15}$ in for x to show the two sides are equal.

$$2(x - 3) - 5x = 4x - (10 - 8x)$$

$$2x - 6 - 5x = 4x - 10 + 8x$$

$$-3x - 6 = 12x - 10$$

$$4 = 15x$$

$$x = \frac{4}{15}$$