LINEAR FUNCTION GRADE 10

SKETCHING STRAIGHT LINE GRAPHS

LINEAR FUNCTION

FIRST LET US LOOK AT THE EQUATION OF A LINEAR FUNCTION (OR STRAIGHT LINE GRAPHS)

$y = ax + q$ which is the same as $y = mx + c$

- **m (or a) is the gradient (slope of graph)**
- **c (or q) is the y-intercept (where the graph cuts the y-axis)**

LINEAR FUNCTION

A METHOD (DUAL INTERCEPT) TO SKETCH A LINEAR FUNCTION (OR STRAIGHT LINE GRAPH)

PRIOR KNOWLEDGE NEEDED FIRST

YOU WILL NEED TO CALCULATE THE COORDINATES OF THE X AND Y INTERCEPTS.

ONCE YOU HAVE THE X AND Y INTERCEPTS YOU WILL PLOT THE POINTS ON A CARTESIAN PLANE.

y-intercept is where x = 0 (where the graph cuts the y-axis)

x-intercept is where y = 0 (where the graph cuts the x-axis)

LINEAR FUNCTION

EXAMPLE 1

SKETCH THE FOLLOWING FUNCTION

$y = 2x + 4$

ANSWER

A method is as follows:

1. **Make sure the function is in standard form (y=……)**
2. **Find the y-intercept by substituting x=0 into the given function**

$y = 2x + 4$

$y = 2.(0) + 4$

$y = 4$

The coordinate to plot is (0;4)

3. Find the x-intercept by substituting y=0 into the given function

$y = 2x + 4$

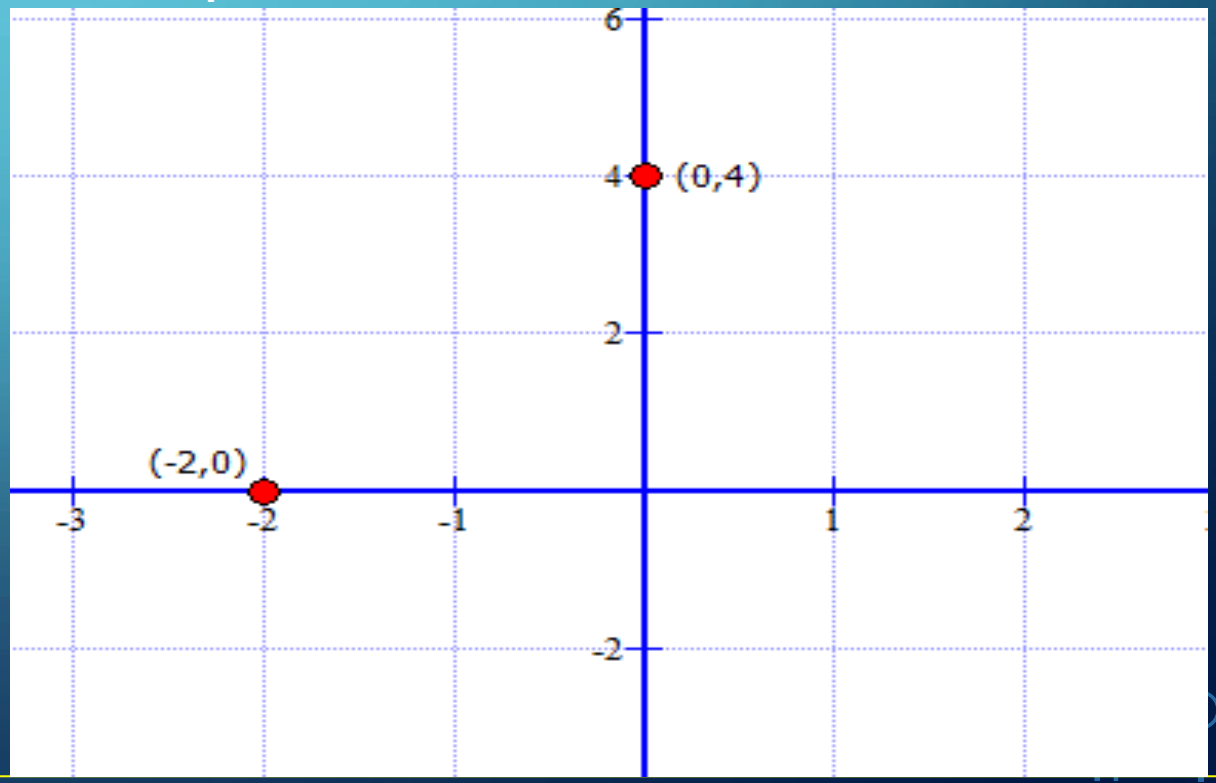
$0 = 2x + 4$

$-4 = 2x$

$-2 = x$

The coordinate to plot is (-2;0)

4. Plot the points on a Cartesian Plane



LINEAR FUNCTION

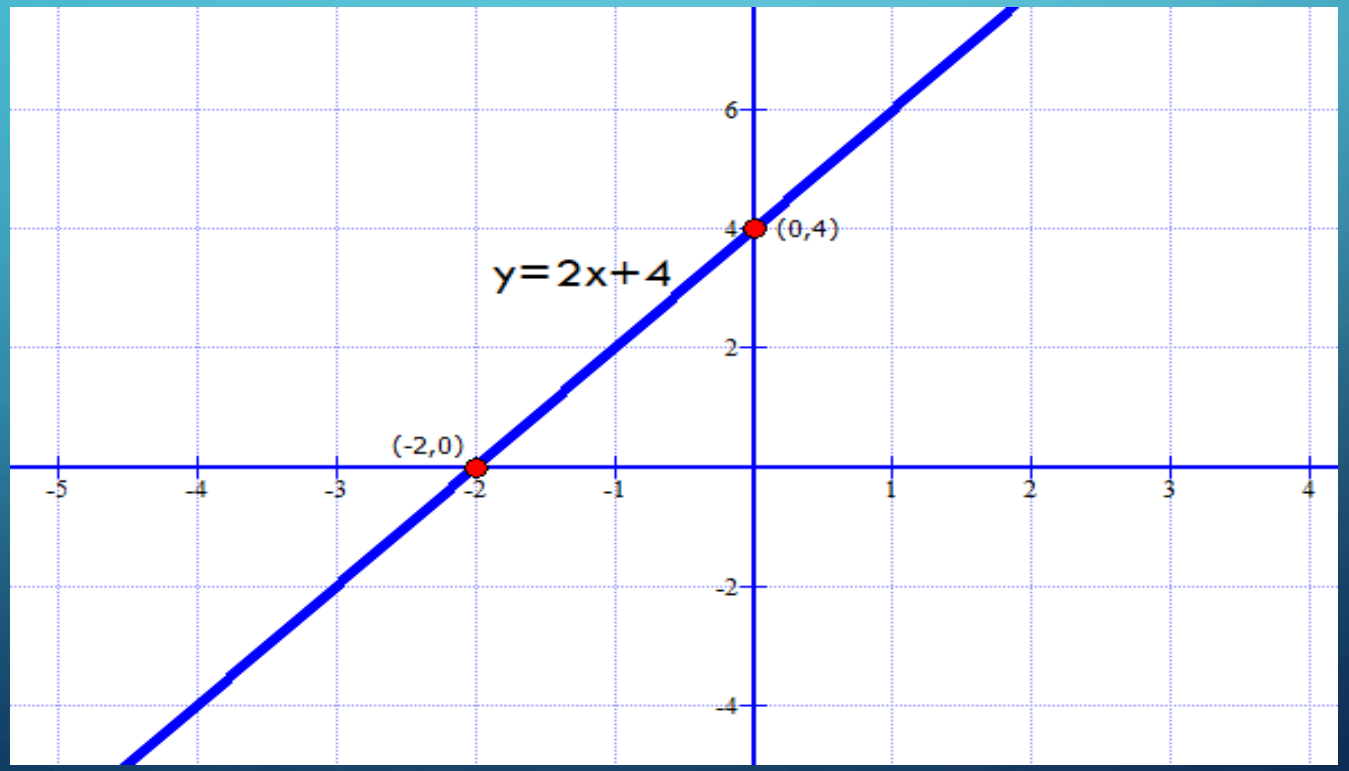
EXAMPLE 1

SKETCH THE FOLLOWING FUNCTION

$y = 2x + 4$

ANSWER

5. Join the points and extend the line.



DONE!!!!!

LINEAR FUNCTION

EXAMPLE 2

Sketch the following functions on the same set of axes.

$$x + 2y - 5 = 0$$
$$3x - y - 1 = 0$$

For $x + 2y - 5 = 0$:

We first write the equation in standard form: $y = -\frac{1}{2}x + \frac{5}{2}$. From this we see that the y-intercept is $\frac{5}{2}$. The x-intercept is 5.

For $3x - y - 1 = 0$:

We first write the equation in standard form: $y = 3x - 1$. From this we see that the y-intercept is -1. The x-intercept is $\frac{1}{3}$.

Graph 1

$\boldsymbol{x + 2y - 5 = 0}$

Y-intercept

$$\left(0; \frac{5}{2}\right)$$

X-intercept

$$(5; 0)$$

Graph 2

$\boldsymbol{3x - y - 1 = 0}$

Y-intercept

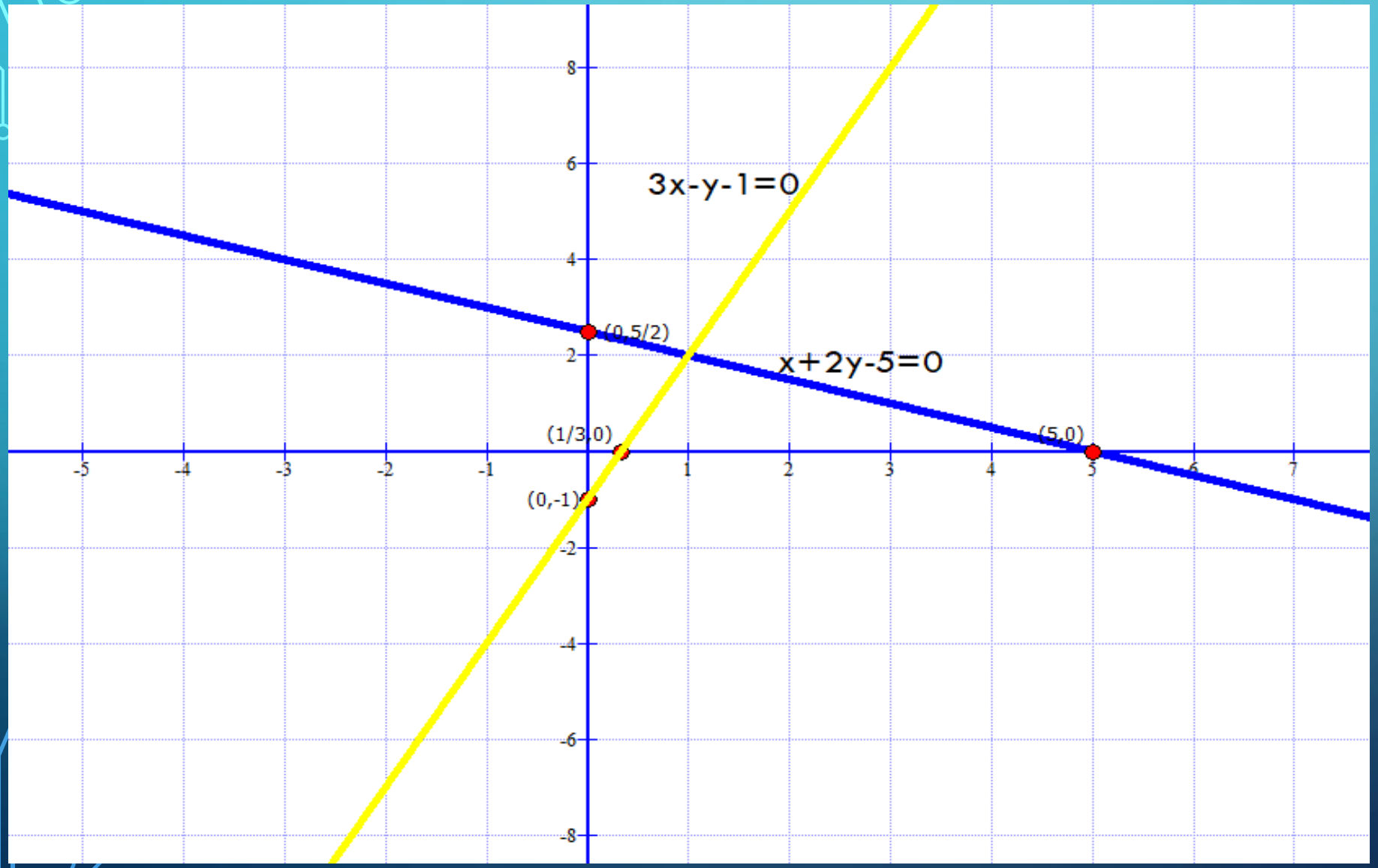
$$(0; -1)$$

X-intercept

$$\left(\frac{1}{3}; 0\right)$$

LINEAR FUNCTION

EXAMPLE 2



Graph 1

$x + 2y - 5 = 0$

Y-intercept

$\left(0; \frac{5}{2}\right)$

X-intercept

$(5; 0)$

Graph 2

$3x - y - 1 = 0$

Y-intercept

$(0; -1)$

X-intercept

$\left(\frac{1}{3}; 0\right)$