

For each of the following, use the information given to find the equation of the line. Then graph the line.

1. Through the point $(3, 2)$ parallel to the line $y = 3x - 4$

$$m = 3$$

$$y - y_1 = m(x - x_1)$$

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

$$y - 2 = 3x - 9$$

$$y = 3x - 7$$

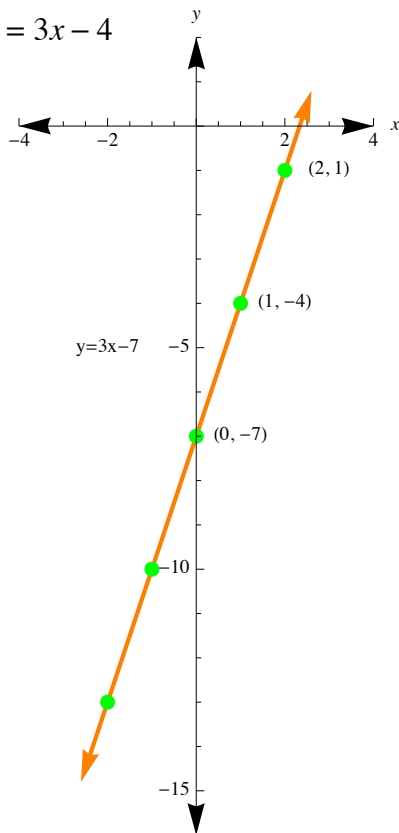


Table of Values:

x	y	(x, y)
-2	-13	$(-2, -13)$
-1	-10	$(-1, -10)$
0	-7	$(0, -7)$
1	-4	$(1, -4)$
2	1	$(2, -1)$

2. Through the point $(-5, 2)$ perpendicular to the line $3x - 2y = 7$

$$3x - 2y = 7$$

$$-2y = -3x + 7$$

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

Slope of new line: $m = -\frac{2}{3}$ through the point $(-5, 2)$

$$y - y_1 = m(x - x_1)$$

$$y - 2 = -\frac{2}{3}(x - (-5))$$

$$y - 2 = -\frac{2}{3}(x + 5)$$

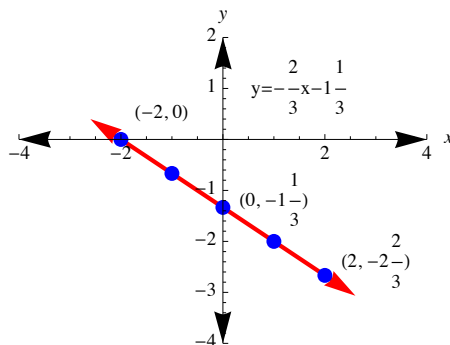
$$y - 2 = -\frac{2}{3}x - \frac{10}{3}$$

$$y = -\frac{2}{3}x - \frac{4}{3}$$

$$y = -\frac{2}{3}x - 1\frac{1}{3}$$

Table of Values:

x	y	(x, y)
-2	0	$(-2, 0)$
-1	$-\frac{2}{3}$	$(-1, -\frac{2}{3})$
0	$-1\frac{1}{3}$	$(0, -1\frac{1}{3})$
1	-2	$(1, -2)$
2	$-2\frac{2}{3}$	$(2, -2\frac{2}{3})$



3. x – intercept of 3, perpendicular to the line $y = 4$

x – intercept of 3 gives the point $(3, 0)$

The line $y = 4$ has a slope of 0, so the slope of the perpendicular line is undefined.

An undefined line is in the form $x = c$

In this problem c is 3.

$$x = 3$$

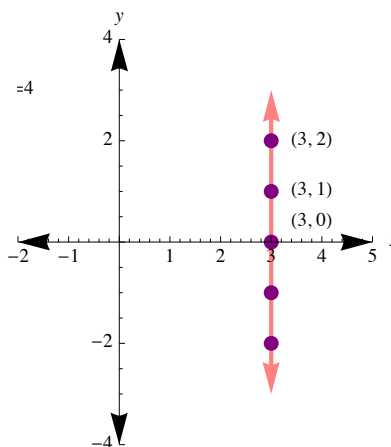


Table of Values:

x	y	(x, y)
3	-2	$(3, -2)$
3	-1	$(3, -1)$
3	0	$(3, 0)$
3	1	$(3, 1)$
3	2	$(3, 2)$

4. y – intercept of 7, parallel to the line $x + 4y = 12$

$$x + 4y = 12$$

$$4y = -x + 12$$

$$y = -\frac{1}{4}x + 3$$

Slope of new line: $m = -\frac{1}{4}$

y – intercept of 7 gives the point $(0, 7)$

$$y - y_1 = m(x - x_1)$$

$$y - 7 = -\frac{1}{4}(x - 0)$$

$$y - 7 = -\frac{1}{4}x$$

$$y = -\frac{1}{4}x + 7$$

Table of Values:

x	y	(x, y)
-2	$7\frac{1}{2}$	$(-2, 7\frac{1}{2})$
-1	$7\frac{1}{4}$	$(-1, 7\frac{1}{4})$
0	7	$(0, 7)$
1	$6\frac{3}{4}$	$(1, 6\frac{3}{4})$
2	$6\frac{1}{2}$	$(2, 6\frac{1}{2})$

