

2.3

Friday, September 30, 2016 11:47 AM

Lines - everything you learned about lines in Algebra I in ONE day!

Three different forms of lines:

$$y = m x + b$$

SLOPE-INTERCEPT
FORM

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

POINT-SLOPE FORM

(x_1, y_1) is a
point

$$Ax + By = C$$

STANDARD FORM

Graph $y = -\frac{3}{4}x + 5$

$$3x - 8y = -24$$

Graph $-2x + 4y = -20$

$$\frac{x}{4} - \frac{y}{8} = 1$$

$$2x - y = 8$$

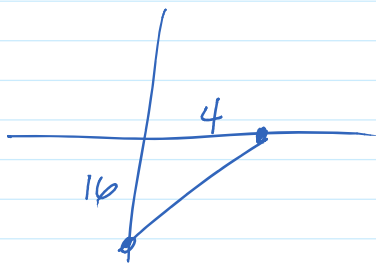
Graph $y - 8 = \overset{\text{slope}}{-\frac{2}{3}}(x + 1)$
 $(-1, 8)$

$$y + 2 = \frac{5}{3}(x + 8)$$

Write the equation of a line ...

• parallel to $8x - 2y = 32$ and through $(17, -4)$

x	y
0	-16
4	0



$$m = \frac{16}{4} = 4$$

$$y - (-4) = 4(x - 17)$$

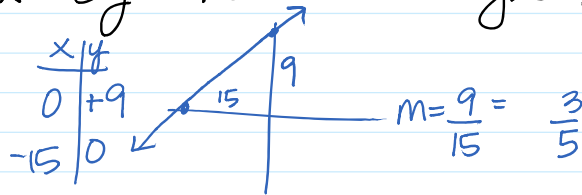
$$y + 4 = 4(x - 17)$$

• perpendicular to $-3x + 5y = 45$ and through the x-int of

$$y = 7x - 2$$

$$0 = 7x - 2$$

$$\frac{2}{7} = x$$



Use: $m = \frac{5}{3}$ & $(\frac{2}{7}, 0)$

$$y - 0 = \frac{5}{3}(x - \frac{2}{7})$$

$$y - 0 = 5/3(x - 2/7)$$

• through the x-int of $y - 1 = 2(x + 3)$ and the
 $0 - 1 = 2(x + 3)$
 $-1 = 2x + 6$
 $-7 = 2x$
 $-7/2 = x$ $(-7/2, 0)$

y-int of $y + 3 = -4(x - 6)$
 $y + 3 = -4(0 - 6)$
 $y + 3 = 24$
 $y = 21$ $(0, 21)$

$$m = \frac{21 - 0}{0 + 7/2} = \frac{21}{7/2} = 21 \cdot \frac{2}{7} = 3 \cdot 2 = 6$$

$$y = 6x + 21$$

• parallel to the x-axis and through the value of the slope between $(2/3, -1/4)$ and $(5/4, 2/3)$

$$m = \frac{2/3 + 1/4}{5/4 - 2/3} = \frac{8/12 + 3/12}{15/12 - 8/12} = \frac{11/12}{7/12}$$

$$= \frac{11}{12} \cdot \frac{12}{7}$$

$$= \frac{11}{7}$$

$$y = \frac{11}{7}$$

$$X = \frac{11}{7}$$