

Jan. 17, 2018

Sect. 2-4

Eqns. of Lines in Point-Slope Form

Defn.

Find eqn.

Going to slope-intercept form

Parallel \perp Perpendicular Eqns.

Special Eqns.

Point-Slope Form

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

slope

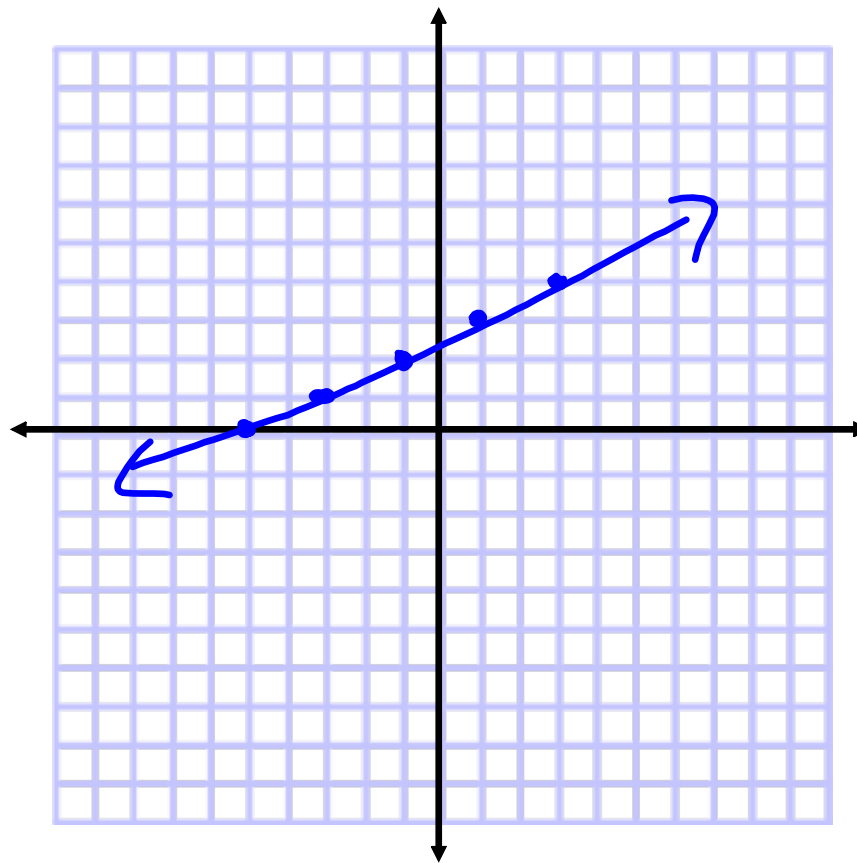
point

$$\text{slope} = m \quad \text{point} = (x_1, y_1)$$

Sketch

$$m = \frac{1}{2}$$

$$\text{pt: } (-1, 2)$$



Find the eqn. in pt-slope form (PSF)

$$(-1, 2) \quad m = \frac{1}{2}$$

$$y - 2 = \frac{1}{2}(x - (-1))$$

$$y - 2 = \frac{1}{2}(x + 1)$$

Find the eqn. in PSE of line going through
 $(-2, 3)$ and $(6, -1)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

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

$$= \frac{-4}{8}$$

$$= -\frac{1}{2}$$

So...

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

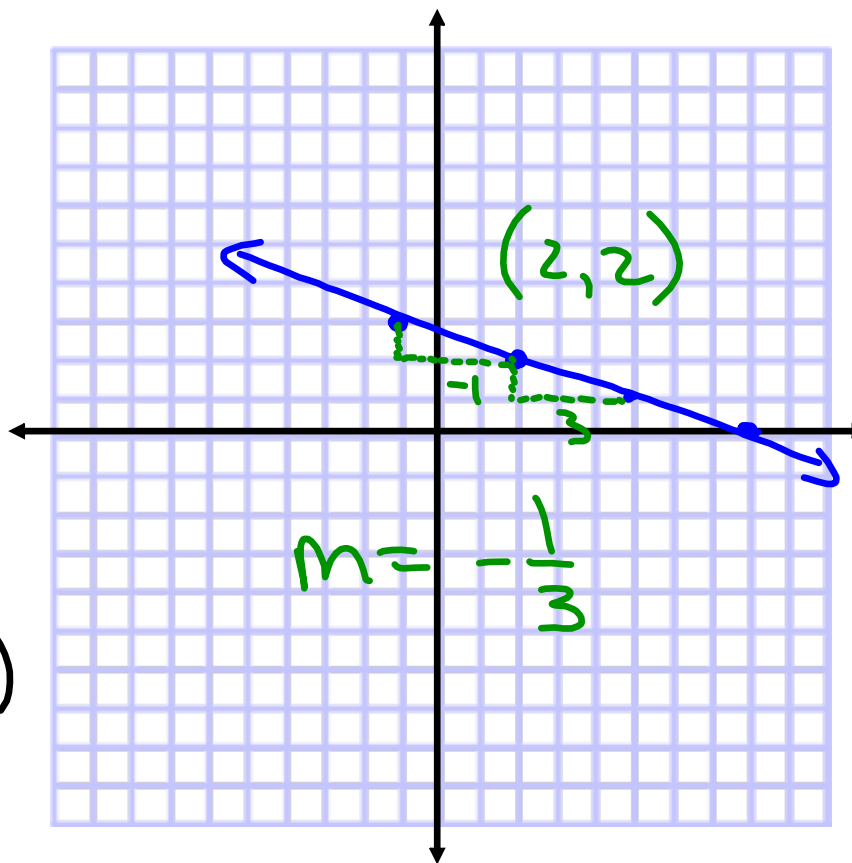
Converting to slope-intercept form (SIF)

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

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

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

Given
graph,
write the
eqn. in PSF.
Pt: $(2, 2)$
 $m = -\frac{1}{3}$
 $y - 2 = -\frac{1}{3}(x - 2)$



Parallel & Perp. Eqns.

Find the eqn. in SIF of the line through
(2, -1) and || to $y = 3x - 5$

$$m = 3$$

$$\parallel m = 3$$

$$\text{pt. : } (2, -1)$$

$$y - (-1) = 3(x - 2)$$

$$y + 1 = 3x - 6$$

$$y = 3x - 7$$

Find the eqn. in PSF of the line through $(-3, 2)$ and \perp to $y = \frac{2}{3}x + 7$

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

$$\perp m = -\frac{3}{2}$$

$$\text{pt: } (-3, 2)$$

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

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

Special Equations

Horizontal and Vertical

Rule: $y = \#$

Rule: $x = \#$

Find the eqn of the horiz. line through $(2, -1)$

$$y = -1$$

Find the eqn. of the vert. line through $(2, -1)$

$$x = 2$$