6.5 Slope-Point form of the Equation for a Linear Function

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slope-intercept form $y = mx + b$

m = slope
b = y-intercept

slope-point form $y - y_1 = m(x - x_1)$

m = slope
(x_1 and y_1) a point on the line

Ex. #1

Describe the graph of the linear function with this equation

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

(y_1, x_1)

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

passes thru $(-2, 1)$ (x_1, y_1)

to graph: - plot the point (-2, 1)
- use the slope $-\frac{1}{2}$ to plot another point
- connect w/ line

Ex. #2

Write an equation for the line that passes thru S(2, -3) and is:

(a.) parallel to the line $y = 3x + 5$

slope

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

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

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

(b.) perpendicular to the line $y = 3x + 5$

slope, y-intercept

* any line that is perpendicular to $y = 3x + 5$ has a slope that is

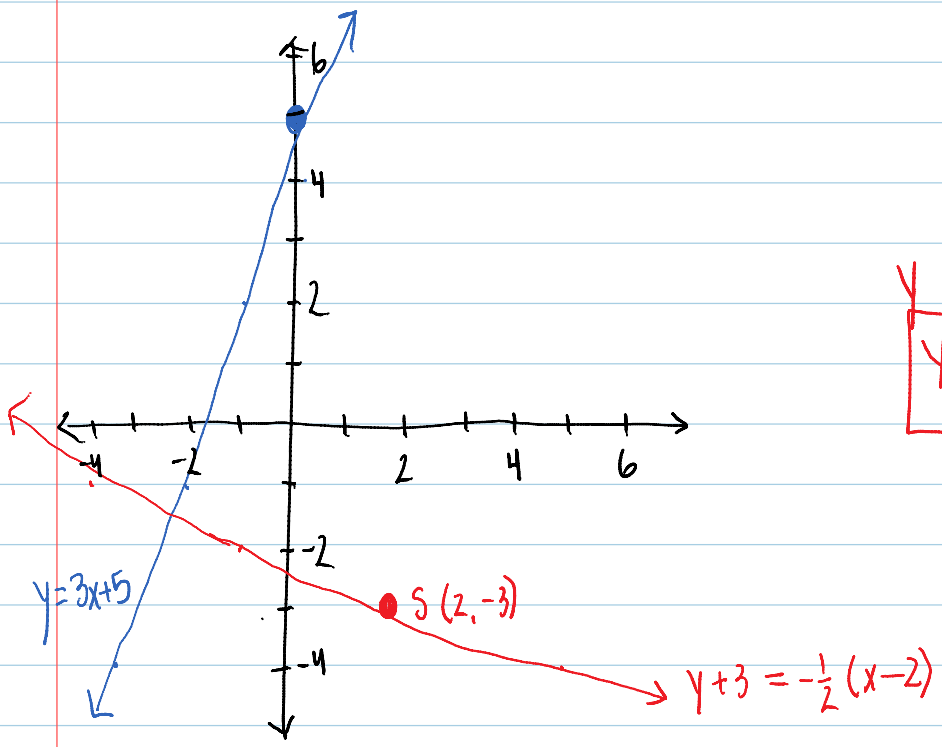
$y-(-5)=3(x-2)$

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

perpendicular to $y=3x+5$ has a slope that is the negative reciprocal of 3 ∴ the slope is $-\frac{1}{3}$

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

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



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