Algebra 1 4.3

Write equations of lines in point-slope form

Write linear equations in different forms

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

slope-intercept form $y = mx + B$

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

standard form → $Ax + By = C$

$2x + 5y = -6$

activity: cut & paste

$3x - y = 15$

Quiz 4.1-4.2
Thurs.

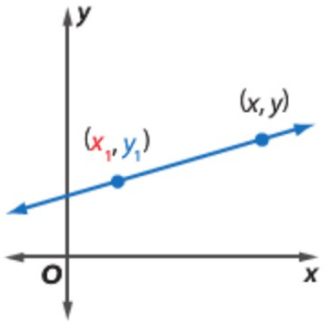
(y-y)/(x-x)=m

$m = \frac{y-y}{x-x}$ $\quad y-y=m(x-x)$

KeyConcept Point-Slope Form

Words The linear equation $y - y_1 = m(x - x_1)$ is written in point-slope form, where (x_1, y_1) is a given point on a nonvertical line and m is the slope of the line.

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



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

$y - -3 = 2(x - 4)$

$y + 3 = 2(x + -4)$

$y + 3 = 2x + -8$

$-3 \quad -3$

$y = 2x - 11$

$y - 5 = 3(x - -1)$

$y + -5 = 3(x + 1)$

$y + -5 = 3x + 3$

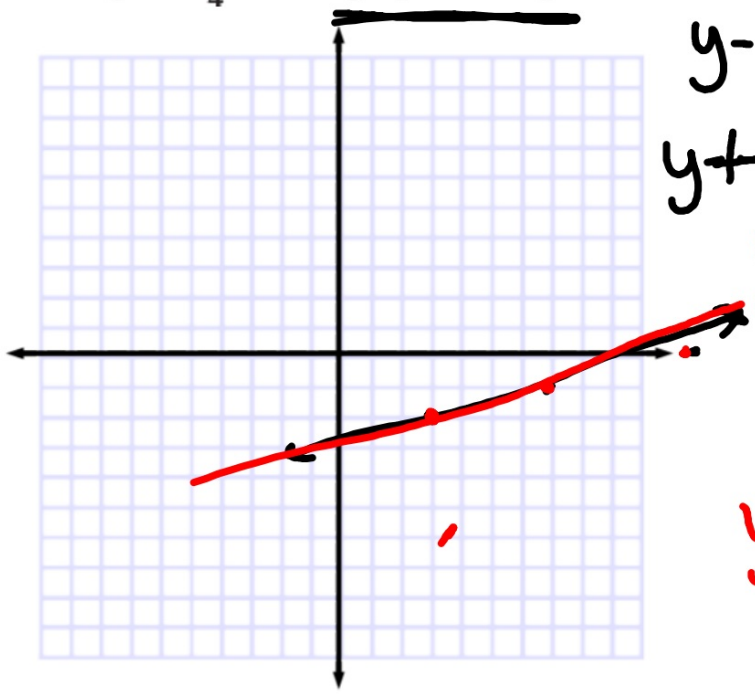
$+5 \quad +5$

$y = 3x + 8$

$Ax + By = C$

Example 1 Write and Graph an Equation in Point-Slope Form

Write an equation in point-slope form for the line that passes through $(3, -2)$ with a slope of $\frac{1}{4}$. Then graph the equation.



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

$y + 2 = \frac{1}{4}(x + \overline{3})$

$y + 2 = \frac{1}{4}x + \frac{-3}{4}$ $\quad -2 + \frac{-3}{4}$

$-2 \qquad -2$

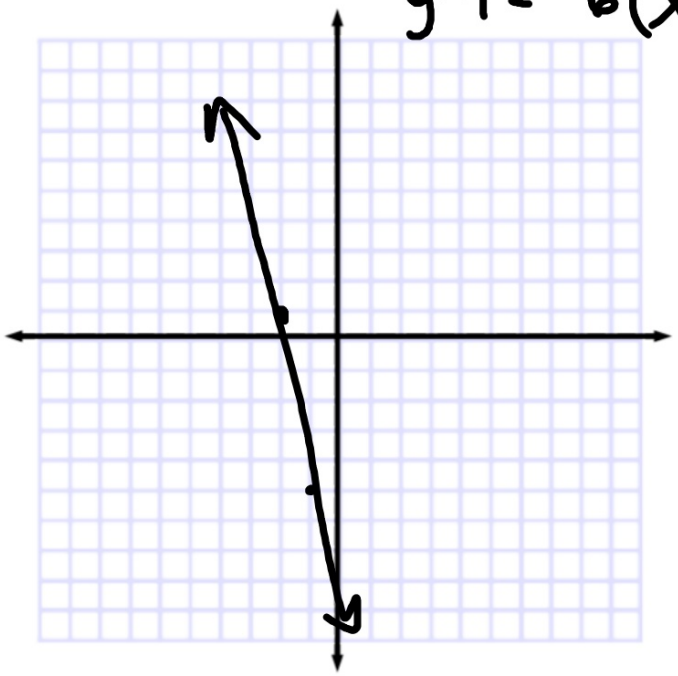
$y = \frac{1}{4}x - 2\frac{3}{4}$

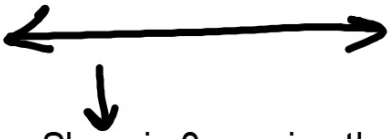
$y = \frac{1}{4}x - \frac{11}{4}$

GuidedPractice $y - y_1 = -6(x - -2)$

1. Write an equation in point-slope form for the line that passes through $(-2, 1)$ with a slope of -6. Then graph the equation.

$y - 1 = -6(x + 2)$



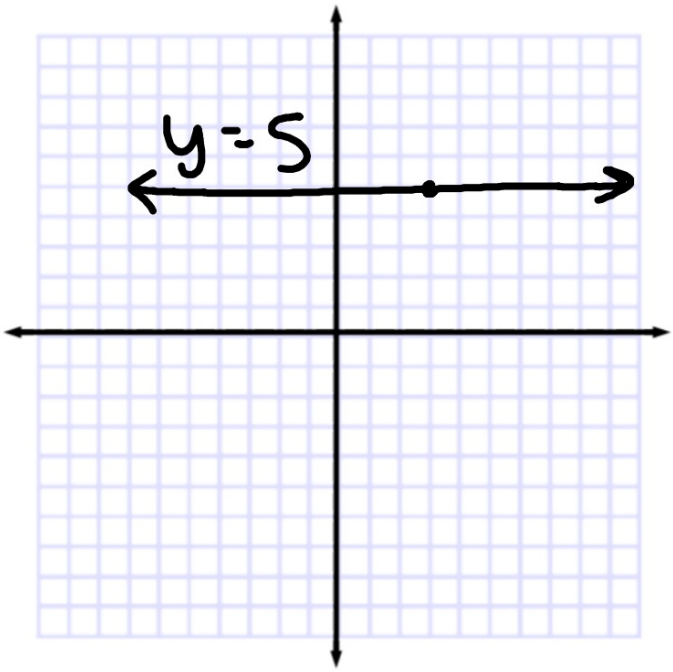


Slope is 0 passing through (3,5)
What kind of line is it?
Graph first, then write equation (easier)

$y - 5 = 0(x - 3)$

$y - 5 = 0$
$+5 \quad +5$

$y = 5$



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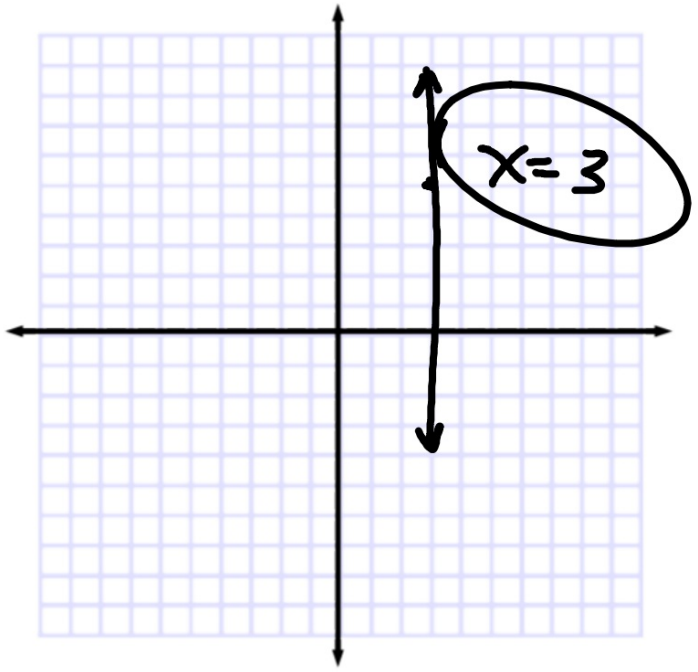
Slope is undefined passing through (3,5)
What kind of line is it?

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

$y - 5 = \text{undefined}(x - 3)$



$(2,5)$ $(1,7)$

$$m = \frac{7-5}{1-2} = \frac{2}{-1} = -2$$

$y-5 = -2(x-2) \longrightarrow y = -2x+9$

$y-7 = -2(x-1) \longrightarrow y = -2x+9$

$Ax + By = C$

Skip. SF

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