6.5 - Point-Slope Form

Vocabulary

- Point Slope Form

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

point: (x_1, y_1)

slope: m

ex: $y - 7 = \frac{1}{2}(x - 3)$

$m = 1/2$

point: $(3, 7)$

$y - (-3)$

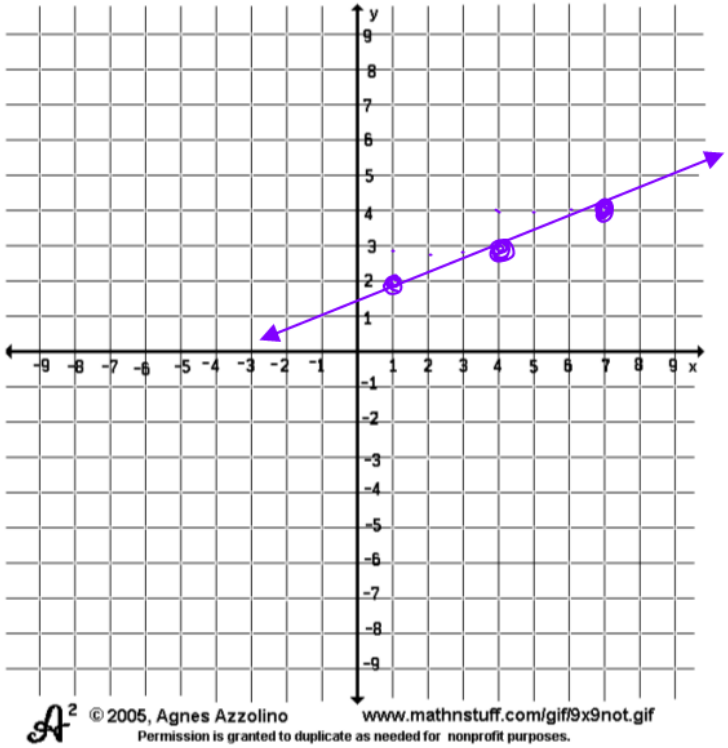
$y + 3 = 1/3(x - 8)$

$m = 1/3$

point: $(8, -3)$

$y - y_1 \qquad x - x_1$

1 EXAMPLE Graph the equation $y - 2 = \frac{1}{3}(x - 1)$.



point: (1, 2)

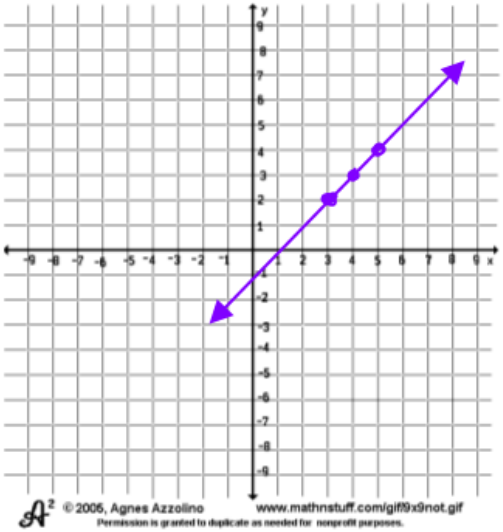
Slope: $\frac{1}{3}$ $\frac{\text{rise}}{\text{run}}$

Graph.

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

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

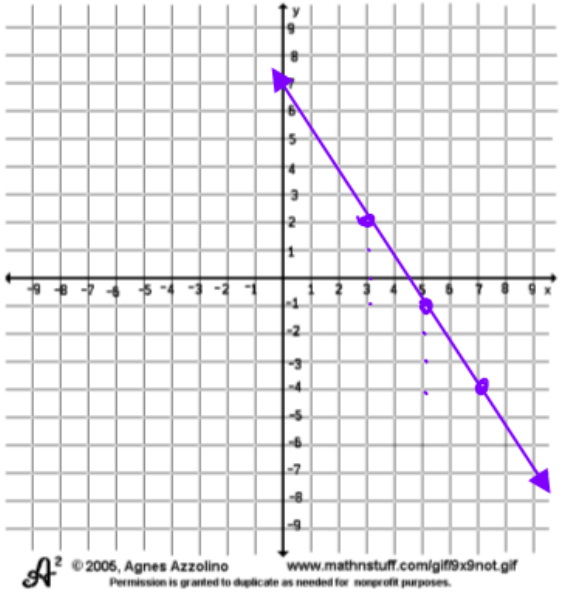
point = (3, 2)



#3. $y-2=-3/2(x-3)$ $\frac{-3}{2}$ rise run

$m=-3/2$

point = (3, 2)



2 EXAMPLE Write the equation of the line with slope –2 that passes through the point (3, –3).

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

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

Write an equation in point-slope form for the line through the given point that has the given slope.

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

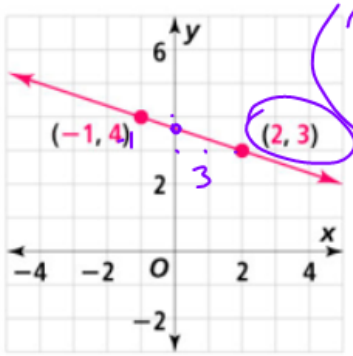
#11 (4, 2) m = -5/3

$y - 2 = -5/3(x - 4)$

#15. (5, -8) m = -3

$y + 8 = -3(x - 5)$

3 EXAMPLE Write equations for the line in point-slope form and in slope-intercept form.



$m = \frac{-1}{3}$

Point: (2, 3)

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

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

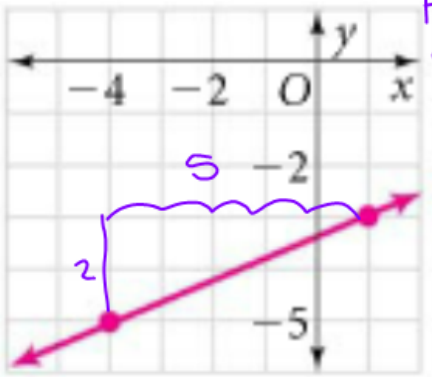
$b = 3\frac{3}{4}$

$y = mx + b$

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

Write an equation of each line in point-slope form.
~~Convert to~~ write slope-intercept form.

37.



point: $(1, -3)$

slope: $\frac{2}{5}$

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

$y + 3 = \frac{2}{5}(x - 1)$

$b = -3\frac{1}{4}$

$y = \frac{2}{5}x - 3\frac{1}{4}$

4 EXAMPLE Is the relationship shown by the data linear? If so, model the data with an equation.

x	y
3	6
2	4
–1	–2
–3	–6

Is the relationship shown by the data linear? If so, model the data with an equation.

31.

x	y
−4	9
2	−3
5	−9
9	−17

Homework: pg. 339 #2, 4, 6, 10, 14, 18, 22, 26, 32, 36, 54, 70

don't do until tomorrow