

5.5 Point-Slope Form

$$\text{Slope } (x_2 - x_1)m = \frac{y_2 - y_1}{(x_2 - x_1)} \quad (x_2, y_2)$$

$$m(x_2 - x_1) = y_2 - y_1 \quad \text{Substitute Property}$$

$$y_2 - y_1 = m(x_2 - x_1)$$

Point-Slope Form

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

Example
 $(3, 4)$
 $m = \frac{2}{3}$
 $y - 4 = \frac{2}{3}(x - 3)$

Slope-Intercept Form
 $y = mx + b$

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

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

$$y = \frac{2}{3}x + 2$$

Standard Form

$$Ax + By = C$$

$$y = \frac{2}{3}x + 2 \quad m = \frac{A}{B}$$

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

$$-2x - 3y = -6 \quad m = \frac{-2}{-3} = \frac{2}{3}$$

x-intercept
 $y = 0$
 $-2x - 3(0) = -6$
 $-2x = -6$
 $x = 3$

y-intercept
 $x = 0$
 $-2(0) - 3y = -6$
 $-3y = -6$
 $\frac{-3y}{-3} = \frac{-6}{-3}$
 $y = 2$

$(3, 4)$

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

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

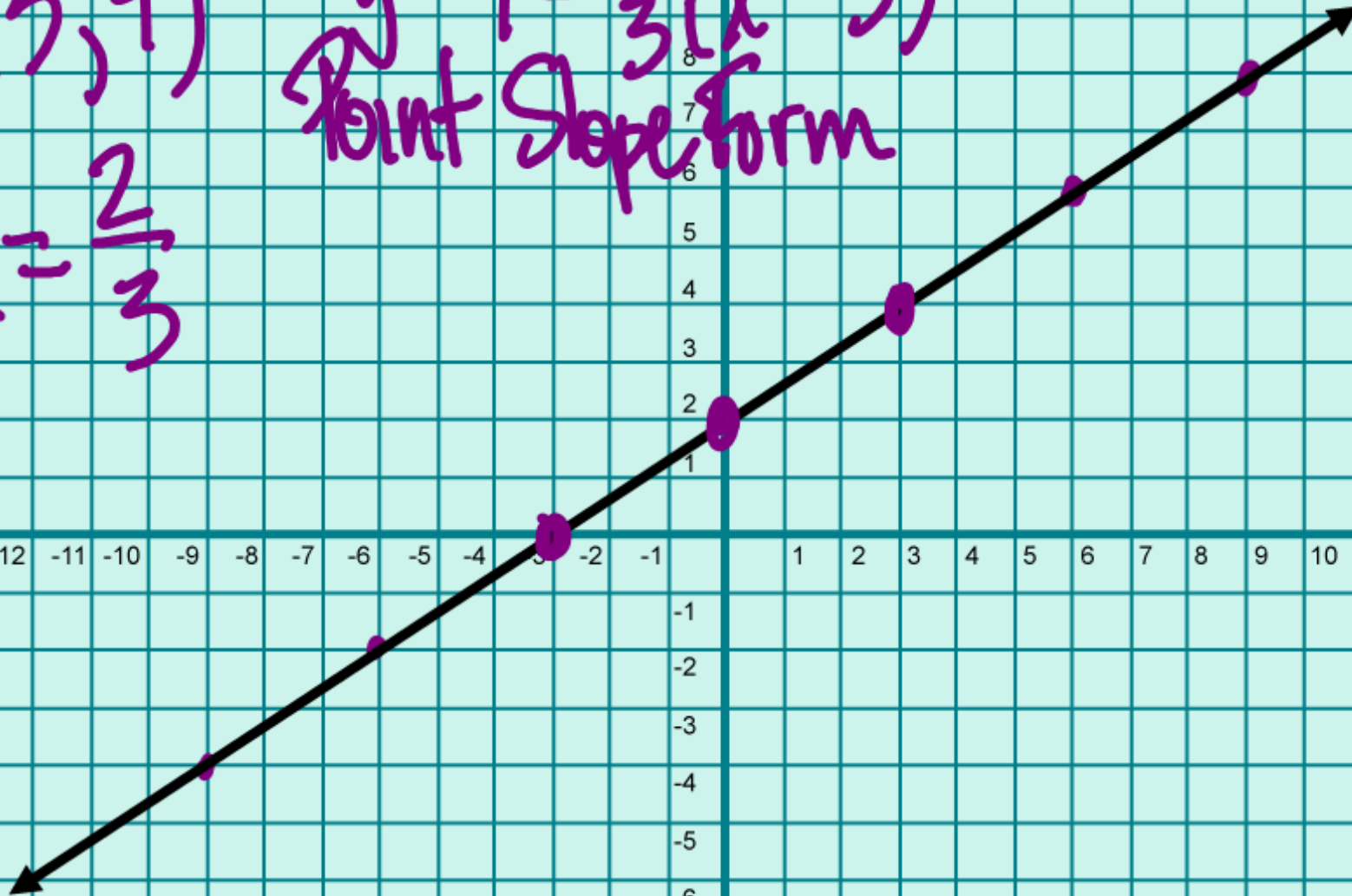
Point Slope Form

X

-14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 1 2 3 4 5 6 7 8 9 10 11 12 13 14

10
9
8
7
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10

Y



$$m=5$$

$$(1,3)$$

Slope-Intercept Form

$$y = mx + b$$

$$3 = 5(1) + b$$

$$3 = 5 + b$$

$$-2 = b$$

$$y = 5x - 2$$

Point-Slope Form

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

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

$$y - 3 = 5x - 5$$

$$y = 5x - 2$$



$$y = 5x - 2$$

$$-5x + y = -2$$

$$5x - y = 2$$

$$(-3, -7)$$

$$m = -10$$

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

$$y - (-7) = -10(x - (-3))$$

$$y + 7 = -10(x + 3)$$

$$y + 7^{-1} = -10x - 30^{-1}$$

$$y = -10x - 37$$

2nd Quit

$$y = 4x + 1$$

y =
Clear

$$4x + 1$$

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

p 256

29-31 All

41

$$y = 2x + 5$$

$$0 = 2x + 5$$

$$-\frac{5}{2} = \frac{2x}{2}$$

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

x-intercept

$$y = 0$$