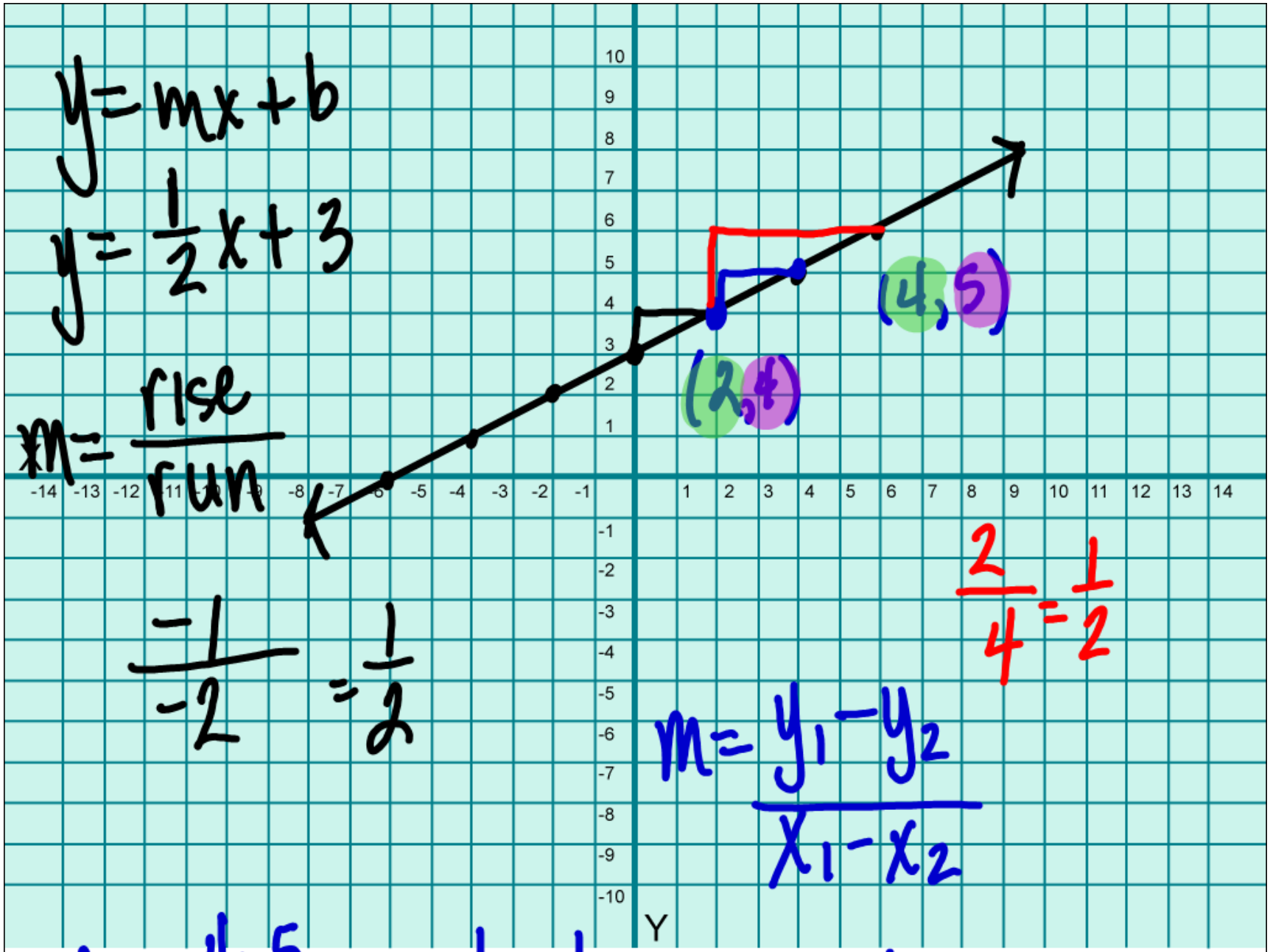
3.8

Slope - Intercept Form

$$y = mx + b$$

Slope m



$m = \frac{4-5}{2-4} = \frac{-1}{-2} = \frac{1}{2}$ $m = \frac{5-4}{4-2} = \frac{1}{2}$

$$m = \frac{y_1 - y_2}{x_1 - x_2} \qquad \frac{\text{difference of } y\text{'s}}{\text{difference of } x\text{'s}}$$

$\frac{\text{rise}}{\text{run}}$

$(3, -1)$ $(-5, 2)$

$$m = \frac{2 - -1}{-5 - 3} = \frac{3}{-8} = -\frac{3}{8} = \frac{-3}{8}$$

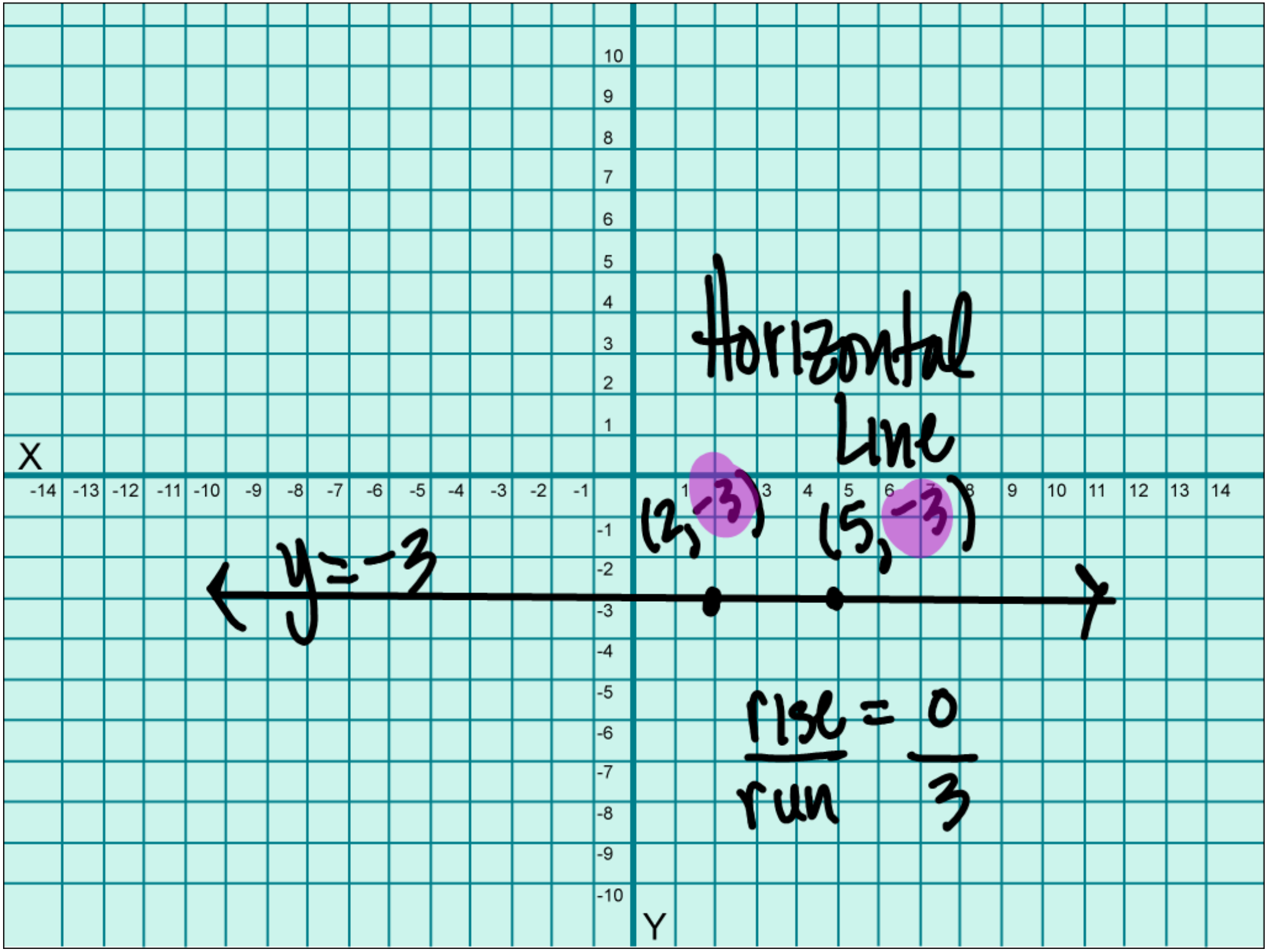
$(2, -3)$ $(5, -3)$

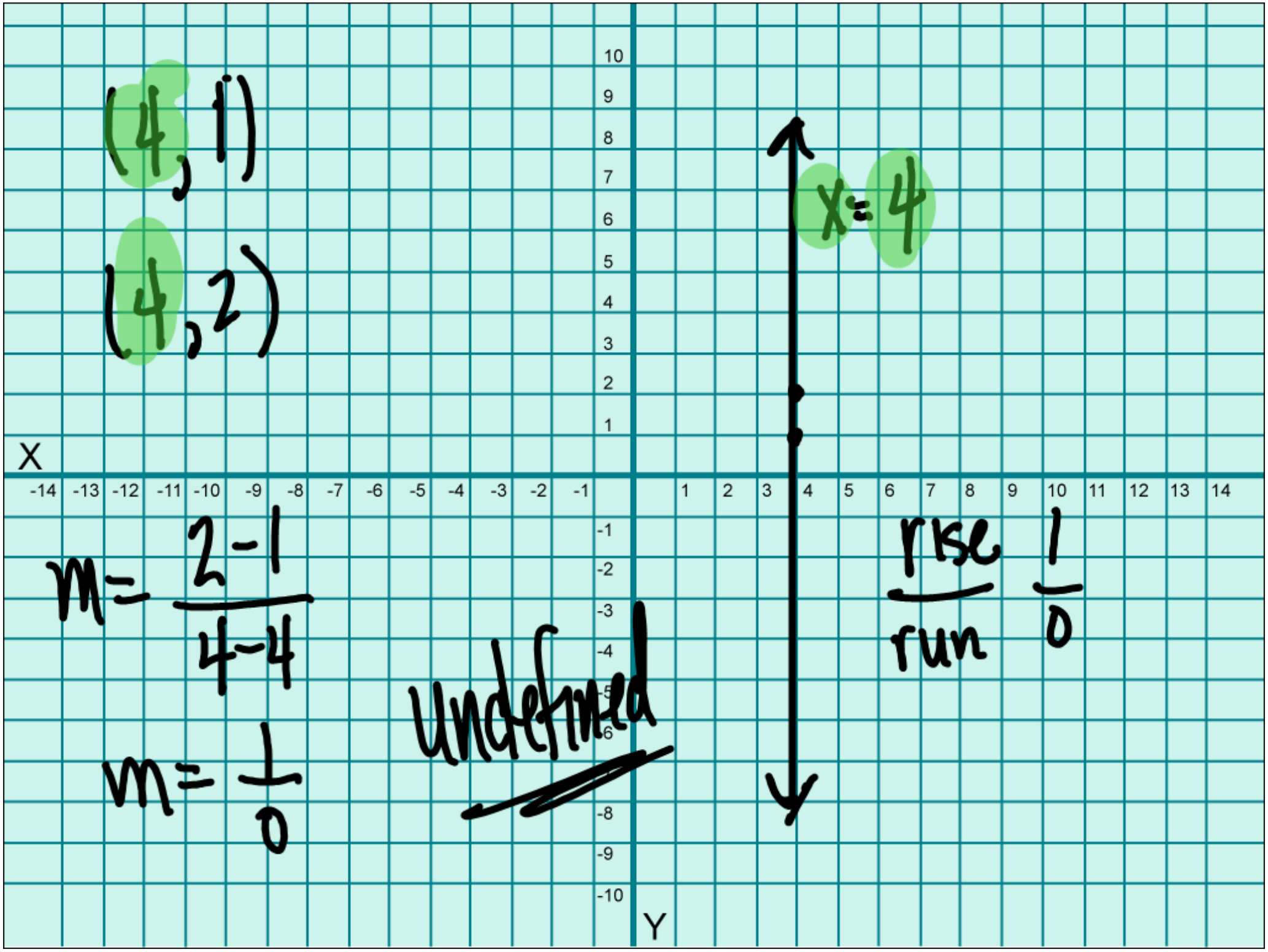
$$m = \frac{-3 + +3}{5 - 2}$$

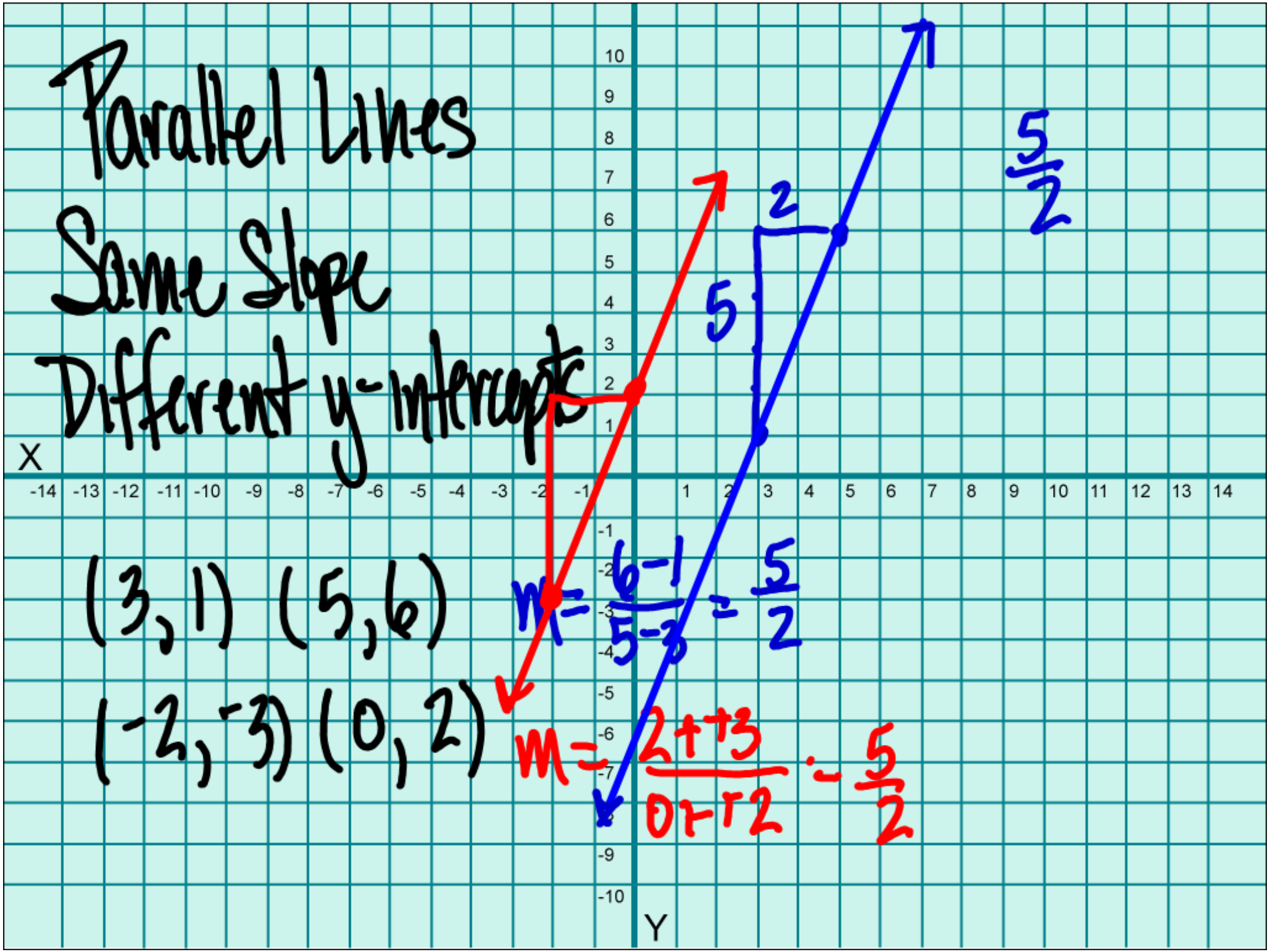
$y = -3$

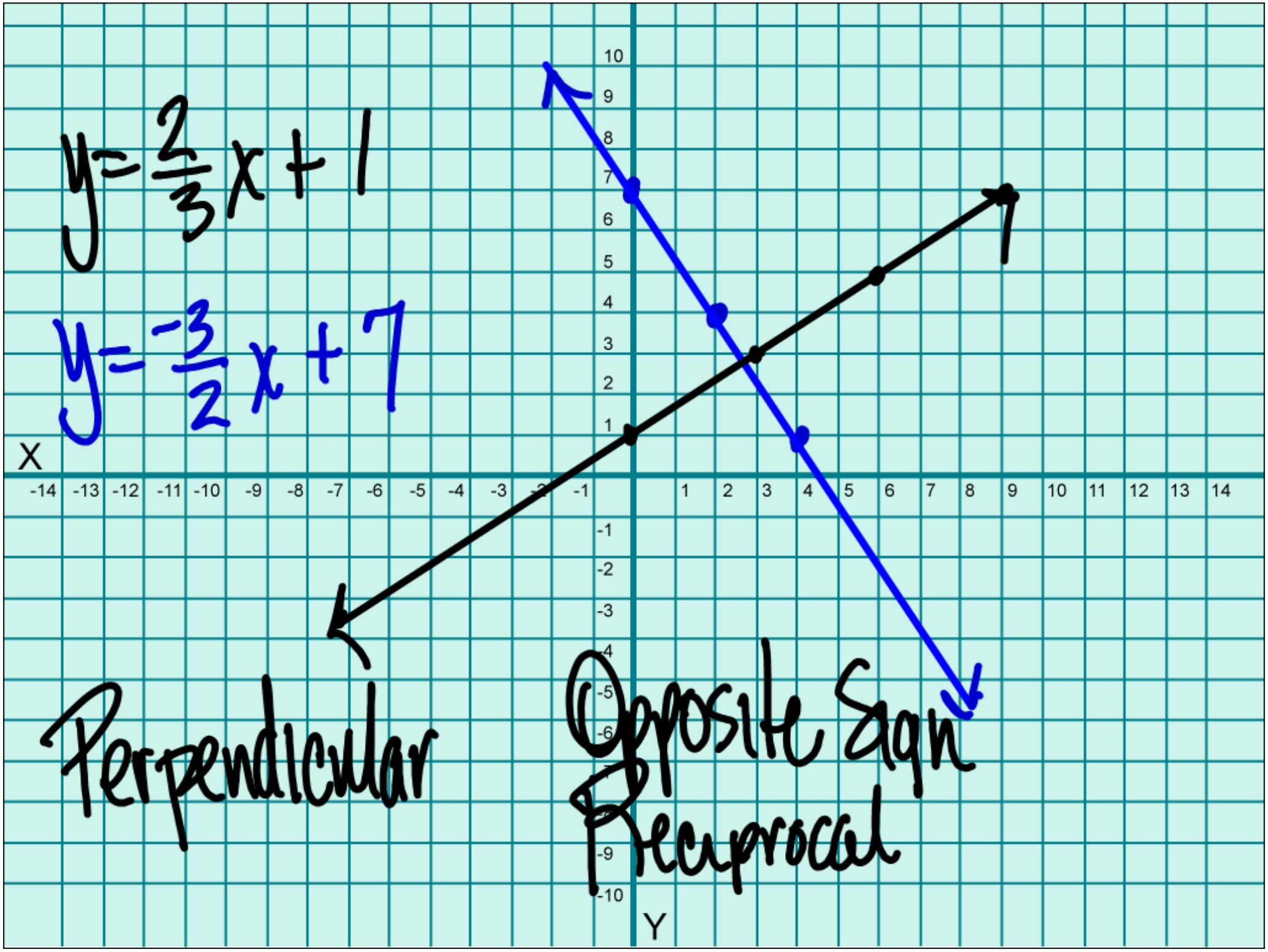
$$m = \frac{0}{3} = 0$$

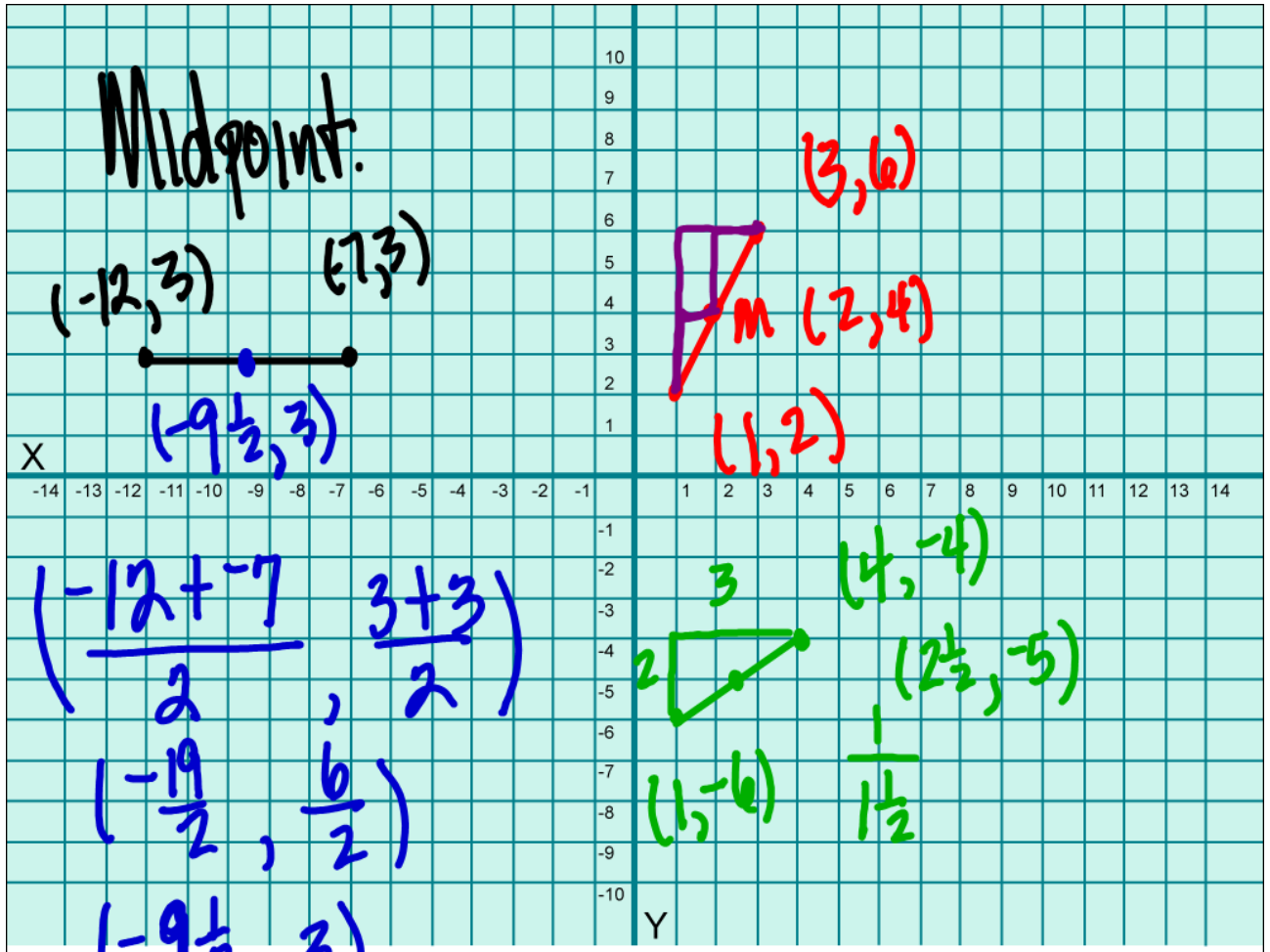
Horizontal Line


Horizontal Line
(2, -3)
(5, -3)
y = -3
rise = 0
run 3
X
Y


(4, 1)
(4, 2)
x = 4
X
Y
m = 2 − 1 / 4 − 4
m = 1 / 0
Undefined
rise / run
1 / 0


Parallel Lines
Same Slope
Different y-intercepts
(3, 1) (5, 6)
(-2, -3) (0, 2)
m = 6-1 / 5-3 = 5/2
m = 2+3 / 0+2 = 5/2
5/2
2
5
X
Y


$y = \frac{2}{3}x + 1$
$y = \frac{-3}{2}x + 7$
X
Y
Perpendicular
Opposite Sign
Reciprocal



$$\left(\frac{-12+-7}{2}, \frac{3+3}{2}\right)$$

$$\left(\frac{-19}{2}, \frac{6}{2}\right)$$

$$(-9\tfrac{1}{2}, 3)$$

$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

Point Ordered Pair

$$\left(\frac{4+1}{2}, \frac{-4+-6}{2}\right)$$

$$\left(\frac{5}{2}, \frac{-10}{2}\right)$$

$$(2\tfrac{1}{2}, -5)$$

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