

Unit 7 Linear Relations

7.5 Slope-Intercept Form of a Line

y-intercept: • where the line crosses the y-axis
• the value of y when $x = 0$



Slope-Intercept Form:

$$y = mx + b$$

$\nearrow$ Slope
 $\nwarrow$ y-intercept
 * coefficient of independent variable * constant term

Ex. State the slope and y-intercept of each linear relation, then graph using that information:

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

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

y-int = -3

b) $y = 2x + 4$

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

y-int = +4

c) $y = 3 - x$

$y = -x + 3$

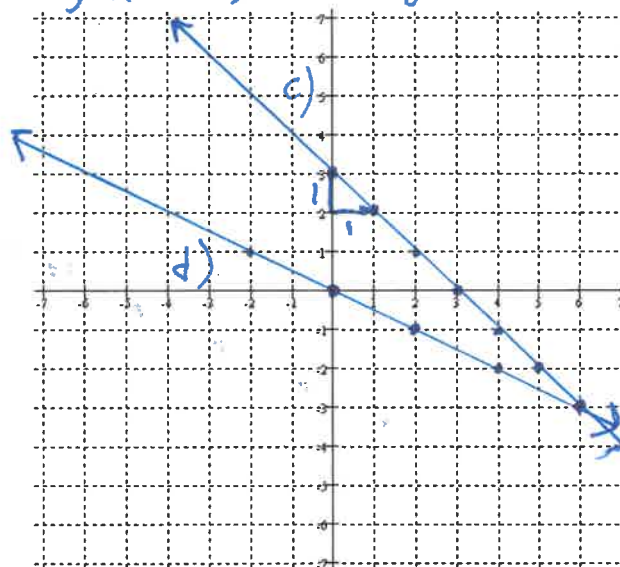
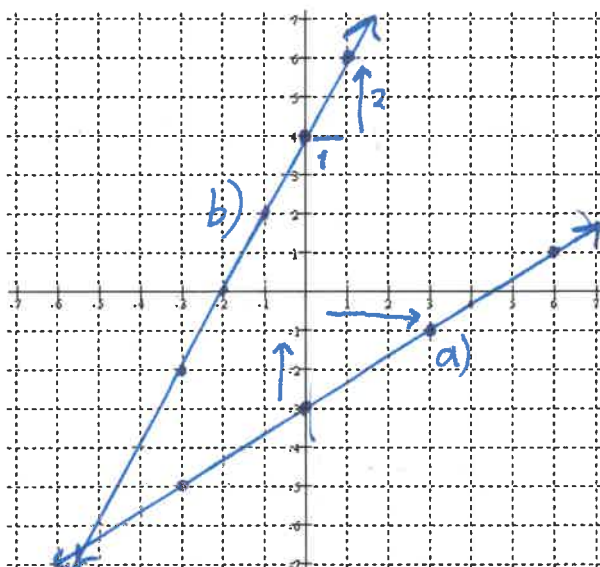
slope = $-1 = -\frac{1}{1}$

y-int = +3

d) $y = -\frac{1}{2}x + 0$

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

y-int



Ex. Write the equation of a line with the given slope & y-intercept:

a) Slope $-\frac{3}{2}$ & y-intercept 5

$y = mx + b$

$y = -x + \dots$

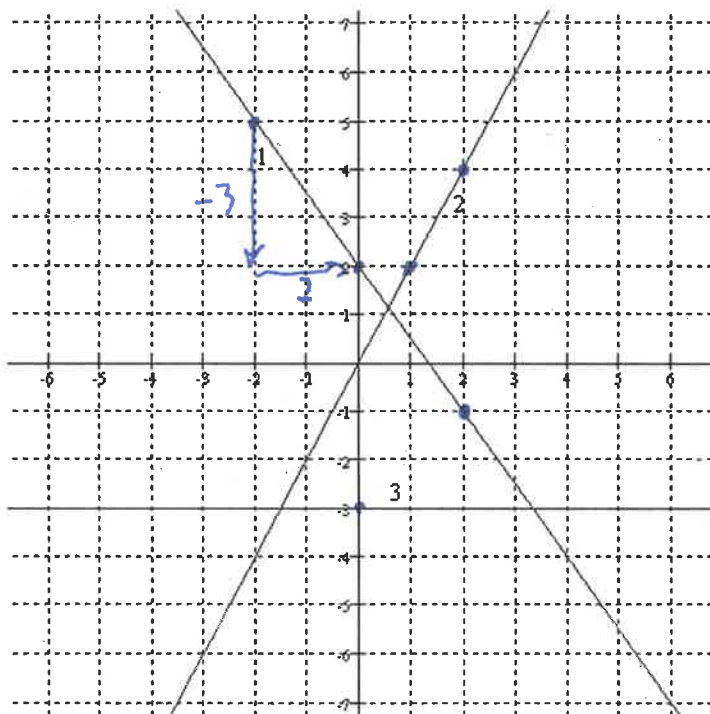
$y = -\frac{3}{2}x + 5$

b) Slope 1 & y-intercept -3

$y = mx + b$

$y = x - 3$

Ex. Determine the equation of each line shown below:



① $m = \frac{-3}{2}$ $b = +2$

$$y = mx + b$$

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

② $m = 2$ $b = 0$

$$y = mx + b$$

$$y = 2x$$

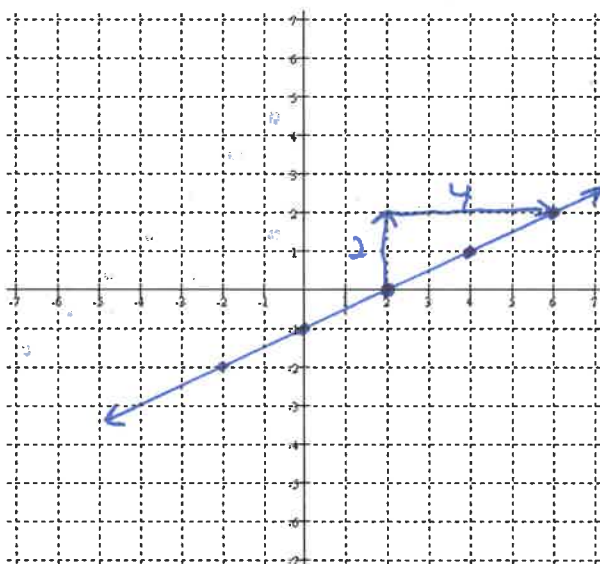
③ $m = 0$ $b = -3$

$$y = mx + b$$

$$y = \cancel{0x} - 3$$

$$y = -3$$

Ex. Find the equation of the line passing through (2, 0) and (6, 2)



$$m = \frac{2}{4} = \frac{1}{2} \quad b = -1$$

$$y = mx + b$$

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

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

$$-2 = -1 - 1$$

$$-2 = -2$$

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