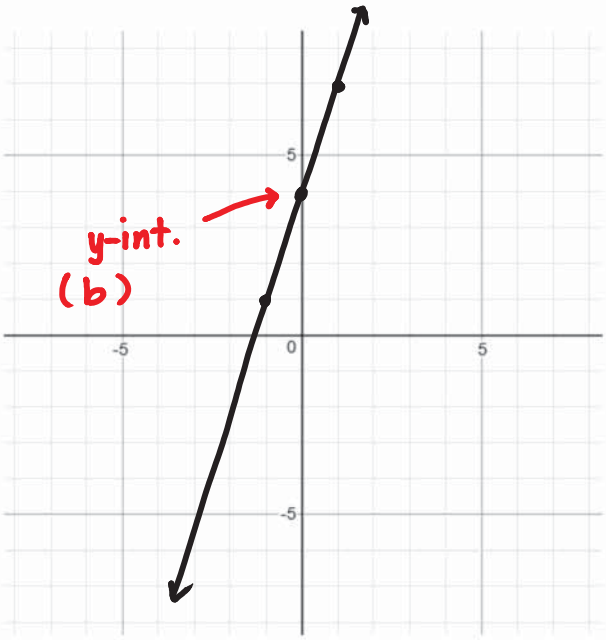
Example 4: The equation of a line is $y = 3x + b$.
Determine the y – intercept (b) when the line passes through the point C (-1 , 1).



Solve :

① graphically

$m = \frac{3}{1}$ → rise / run

point C (-1, 1)

from the graph, $b = 4$

② algebraically

$y = 3x + b$ C (-1, 1)

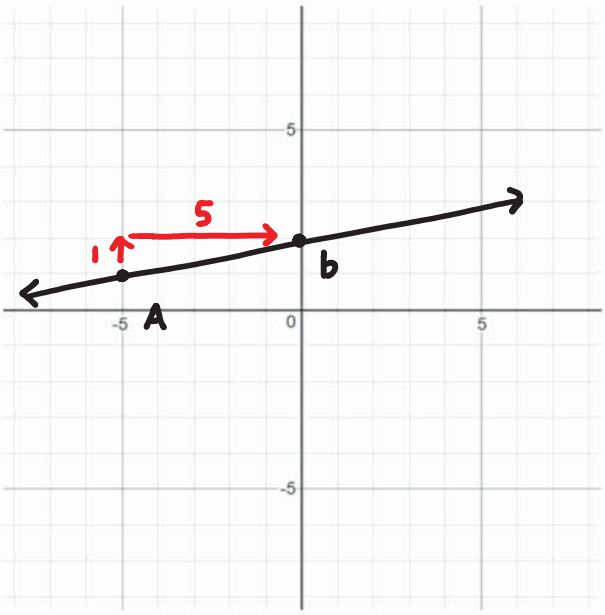
$1 = 3(-1) + b$

$1 = -3 + b$

$+3 \quad +3$

$4 = b$

Example 5: The equation of a line is $y = mx + 2$.
Determine the slope (m) when the line passes through the point A (-5 , 1).



Solve :

① graphically

$b = 2$ (0, 2) point A (-5, 1)

$m = \frac{1}{5}$

② algebraically

A (-5, 1)

$y = mx + 2$

$1 = m(-5) + 2$

$-2 \quad -2$

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

$\frac{1}{5} = m$

rate (slope)

Example 6: The student council sponsored a dance. A ticket cost $5 and the cost for the DJ was $300.

dependent variable

a) Write an equation for the Profit, P dollars, on the sale of t tickets.

independent variable

constant value

$y = mx + b$

$P = 5t - 300$

we subtract 300 since this is a cost (not a profit)

b) Suppose 123 people bought tickets. What was the profit?

t

$P = 5(123) - 300$

$= 615 - 300$

$P = \$315$

c) Could the profit be exactly $146? Justify your answer.

P

$146 = 5t - 300$

$+300 \quad +300$

$\frac{446}{5} = \frac{5t}{5}$

$89.2 = t$

Can't have a portion of a ticket, so $146 cannot be a profit value.

constant value

Example 7: You have a part time job working at a restaurant. You earn $40 per shift plus 10% of the tips.

t

dependent variable

rate (slope)

must be written as a decimal, 10% = 0.10

a) Write an equation for your total earnings, E dollars, when the tips are t dollars.

independent variable

$y = mx + b$

$E = 0.10t + 40$

b) What will you earn when the shift's tips are $350?

t

$E = 0.10(350) + 40$

$= 35 + 40$

$E = \$75$

Practice: p.362 #4 – 6, 8, 9, 12 – 14