Section 3.1 Linear functions

$y = mx + b$

m: slope / rate of change

b: initial value / y-intercept

Notes:

(1) The average rate of change of a linear function remains constant.

(2) The graph of a linear function is a line.

Recall: $m = \text{slope} = \frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}}$

(3) Recall: standard form: $y = mx + b$

point-slope form: $y - y_1 = m(x - x_1)$

Ex] Let $f(x) = x^2$. Find the equation of the secant line between $a = 2$, $b = 4$.

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{f(b) - f(a)}{b - a} = \frac{4^2 - 2^2}{4 - 2} = 6.$$

$(x_1, y_1) = (2, 2^2)$. $\longrightarrow$ by point slope, the line is $y - 4 = 6(x - 2)$ or $y = 6x - 8$.

Discuss Q 2 on group work.

Def] The quantity A is proportional to B if

$A = kB$ for some constant k.

k is called the constant of proportionality.

Group work Q 3.