Average Rate of Change: interval of x-values

$$[a, b]$$

$$\frac{f(a) - f(b)}{a - b}$$

Using a Table

Ex. 1: Find the average rate of change

on the interval $[0,1]$.

$$\frac{\boxed{f(0)} - \boxed{f(1)}}{0 - 1}$$

x	f(x)
-2	15
-1	12
0	-7
1	-2
2	21
3	20
4	-1

$$\frac{-7 + 2}{0 - 1} = \frac{-5}{-1} = \boxed{5}$$

Using a Table

Ex. 2: Find the average rate of change

on the interval $[-2, 0]$.

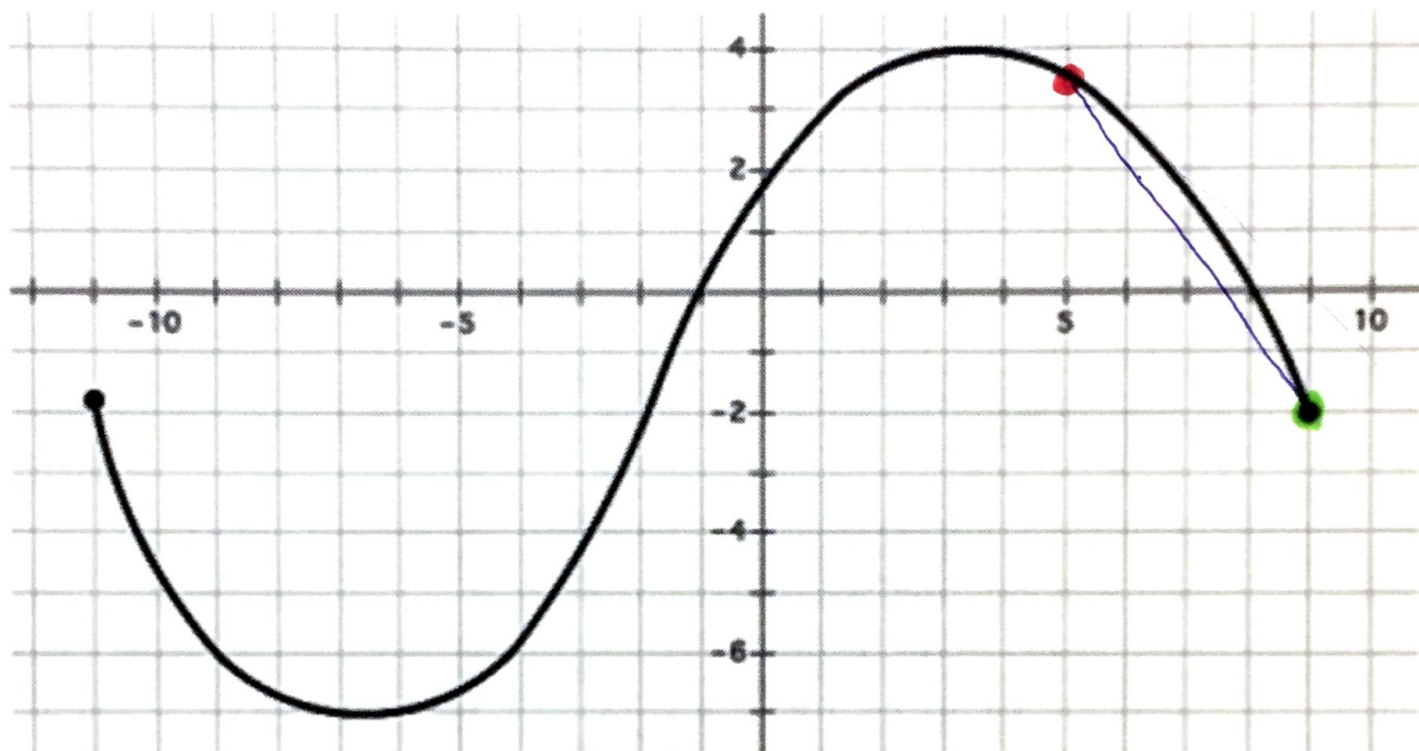| x	$f(x)$
-2	15
-1	12
0	-7
1	-2
2	21
3	20
4	-1

$$\frac{f(-2) - f(0)}{-2 - 0}$$

$$\frac{15 + 7}{-2 - 0} = \frac{22}{-2} = \boxed{-11}$$

Ex. 3: Find the average rate of change

on the interval $[-2, 3]$.

$$\frac{f(-2) - f(3)}{-2 - 3}$$

$$\frac{15 - 20}{-2 - 3} = \frac{-5}{-5} = \boxed{1}$$

Using a graph
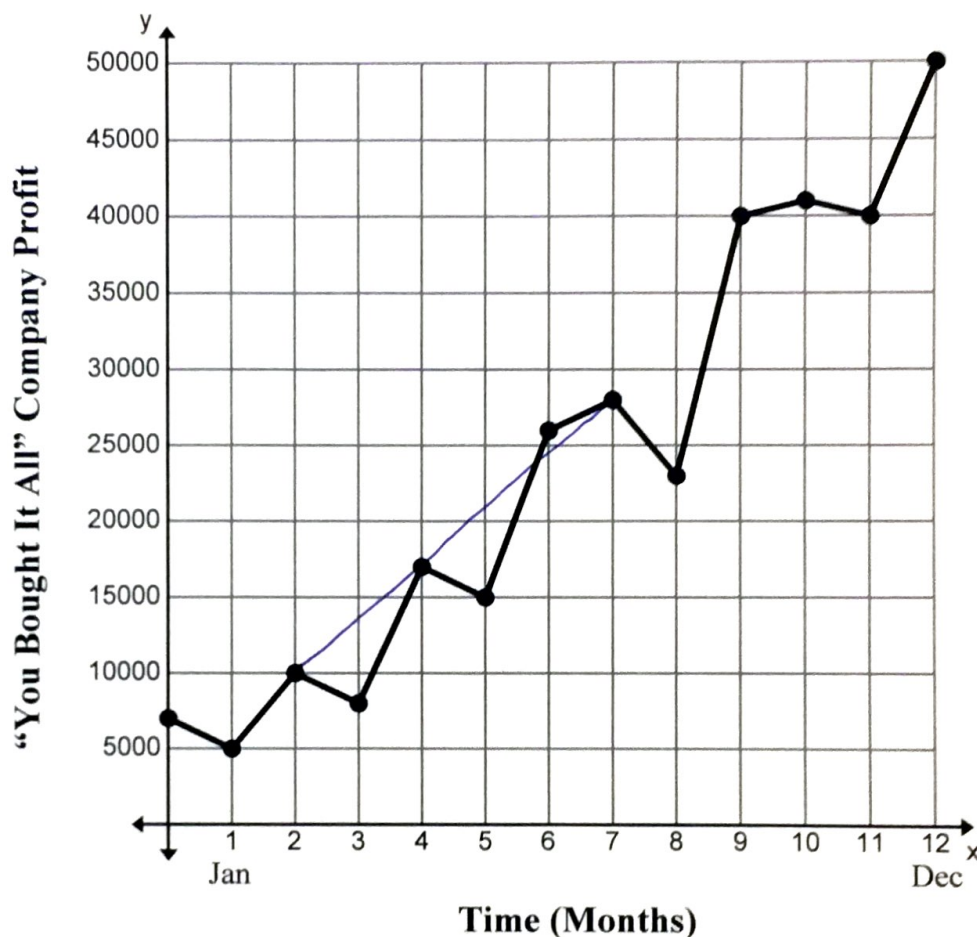

Ex. 4: Find the average rate of change on the interval $[5,9]$.

$$\frac{f(5) - f(9)}{5-9}$$

$$\frac{3.5 + -2}{5-9} \approx \frac{5.5}{-4}$$

$$\frac{-11}{8} = -1.375$$

Ex. 5: Find the average rate of change on the interval $[-6,3]$.

$$\frac{f(-6) - f(3)}{-6-3} = \frac{-7 - 4}{-6-3} = \frac{-11}{-9} = \frac{11}{9}$$

The graph below shows the profit for a company for the year.

Ex. 6: What is the average change in profit from February to July?

$$\frac{f(2) - f(7)}{2 - 7} = \frac{10000 - 27500}{2 - 7} = \frac{-17500}{-5}$$

$\$3500$ per month

Ex. 7: What is the average change in profit from September to November?

Ex. 8: What is the average change in profit from January to December?