

1. From (1, 3) to (4, 9): find the average rate of change.

$$(9 - 3) / (4 - 1) = 6/3$$

Answer: 2

2. From (0, 10) to (5, 0):

$$(0 - 10) / (5 - 0) = -10/5$$

Answer: -2

3. Table: $x = 2, y = 7$ and $x = 6, y = 19$.

$$(19 - 7) / (6 - 2) = 12/4$$

Answer: 3

4. $f(x) = x^2$. AROC from $x = 1$ to $x = 3$.

$$f(1) = 1, f(3) = 9$$

$$(9 - 1) / (3 - 1) = 8/2$$

Answer: 4

5. A plant grows from 12 cm to 30 cm in 6 days. AROC?

$$(30 - 12) / 6$$

Answer: 3 cm per day

6. $f(x) = 2x + 5$. AROC from $x = 0$ to $x = 4$.

$$f(0) = 5, f(4) = 13$$

$$8/4 = 2 \text{ (lines are constant!)}$$

Answer: 2

7. Car value: \$18,000 at year 0, \$12,000 at year 4. AROC?

$$(12000 - 18000)/4 = -6000/4$$

Answer: -\$1,500 per year

8. $f(x) = x^2 - 3$. AROC from $x = -1$ to $x = 2$.

$$f(-1) = -2, f(2) = 1$$

$$(1 - (-2)) / (2 - (-1)) = 3/3$$

Answer: 1

9. $f(x) = x^2$. Compare AROC on $[0,2]$ vs $[2,4]$. What does it show? ★ challenge

$$[0,2]: (4-0)/2 = 2$$

$$[2,4]: (16-4)/2 = 6$$

Rate itself is growing

Answer: 2 vs 6 - curve steepens

10. Population table: year 0: 500; year 2: 720; year 5: 1200. AROC over $[0,5]$, and is $[2,5]$ faster? ★ challenge

$$[0,5]: 700/5 = 140 \text{ per year}$$

$$[2,5]: 480/3 = 160 \text{ per year}$$

Answer: 140/yr; yes, $[2,5]$ is faster