

$$\text{Average Rate of Change} = \frac{f(b) - f(a)}{b - a} \text{ for } a \leq x \leq b$$

Find the average rate of change between each interval for the exponential functions.

1) $y = 4 \cdot 2^x$

a) $-2 \leq x \leq 0$

$$\frac{4-1}{0-(-2)} = \frac{3}{2} = 1.5$$

2) $y = 3 \cdot 2^x$

a) $-2 \leq x \leq -1$

$$a = -2$$

$$b = 0$$

$$f(a) = 4 \cdot 2^{-2}$$

$$f(b) = 4 \cdot 2^0$$

$$f(a) = 1$$

$$f(b) = 4$$

b) $0 \leq x \leq 1$

b) $0 \leq x \leq 2$

c) $-1 \leq x \leq 1$

c) $2 \leq x \leq 3$

3) $y = \frac{1}{4} \cdot 2^x$

a) $0 \leq x \leq 2$

4) $y = 3 \cdot \left(\frac{1}{2}\right)^x$

a) $-1 \leq x \leq 0$

b) $2 \leq x \leq 3$

b) $-1 \leq x \leq 2$

c) $3 \leq x \leq 5$

c) $0 \leq x \leq 1$

For each sequence, state if it is arithmetic or geometric, give the common difference or ratio, write the recursive formula, the explicit formula, and find the given term.

5) 3, -18, 108, -648, 3888, ... Find $a(10)$.

6) 25, -5, 1, $-\frac{1}{5}$, $\frac{1}{25}$, ... Find $a(7)$.

7) -15, -11, -7, -3, 1, ... Find $a(20)$.

8) 1.3, 3.8, 6.3, 8.8, 11.3, ... Find $a(17)$.

9) 1, 6, 36, 216, 1296, ... Find $a(10)$.

10) -2, -4, -8, -16, -32, ... Find $a(20)$.