

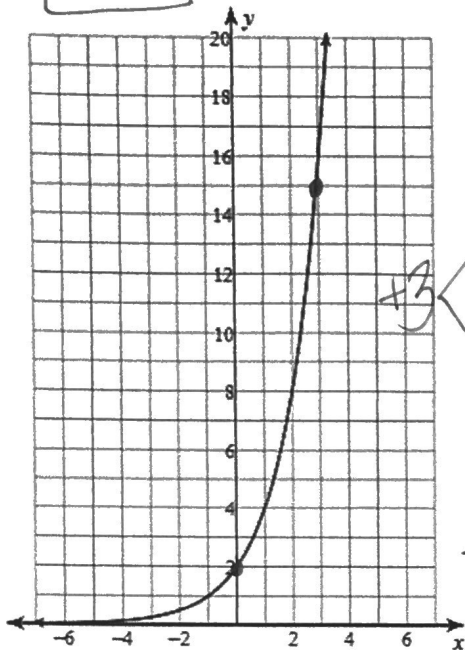
or Slope or $\frac{\text{Rise}}{\text{Run}}$ or $\frac{y}{x}$

Practice Assignment

Directions: Find the average rate of change for the given intervals

1. $0 \leq x \leq 3$

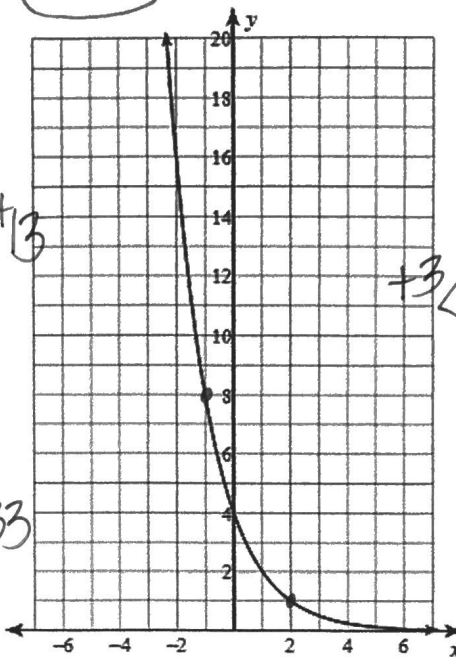
2. $-1 \leq x \leq 2$



x	y
0	3
3	15

$\frac{15 - 3}{3 - 0} = \frac{12}{3} = 4$

or 4.33

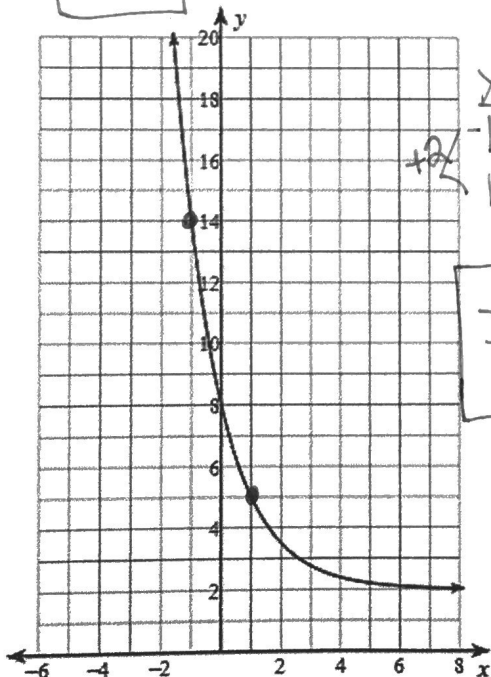


x	y
-1	8
2	1

$\frac{1 - 8}{2 - (-1)} = \frac{-7}{3} = -2.33$

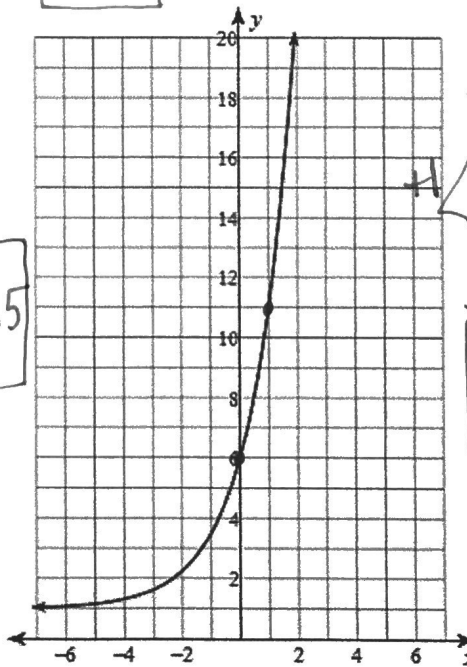
3. $-1 \leq x \leq 1$

4. $0 \leq x \leq 1$



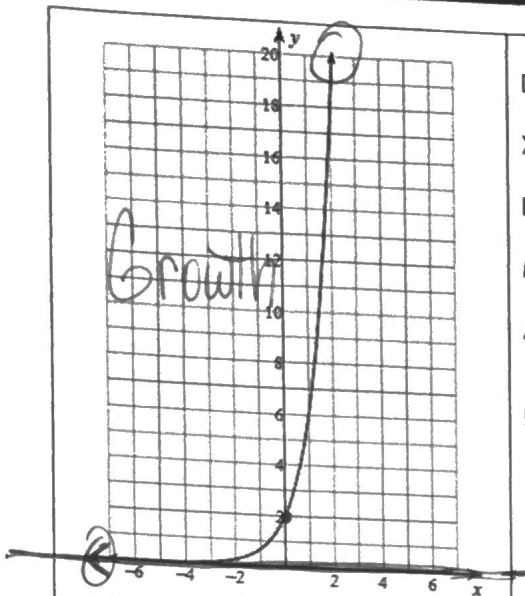
x	y
-1	14
1	5

$\frac{5 - 14}{1 - (-1)} = \frac{-9}{2} = -4.5$

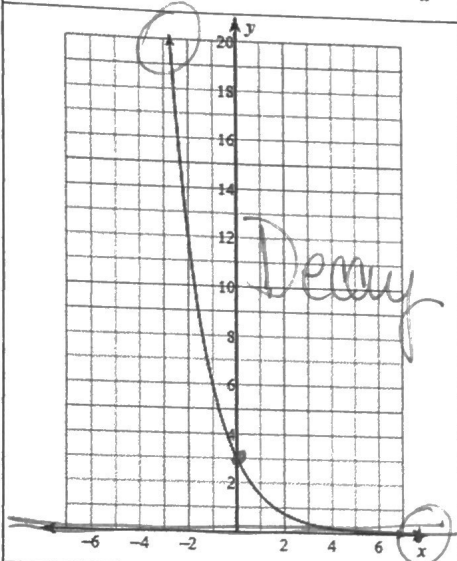


x	y
0	6
1	9

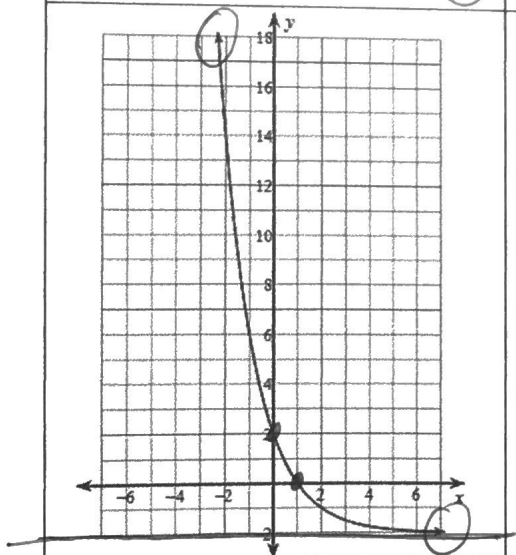
$\frac{9 - 6}{1 - 0} = \frac{3}{1} = 3$



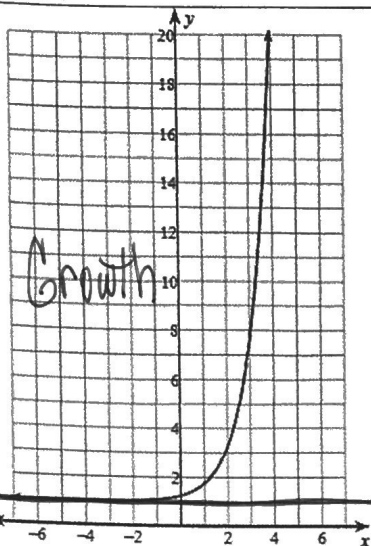
Domain: \mathbb{R} Range: $y > 0$
 X-intercept: N/A y-intercept: (0, 2)
 Interval of Increase: \mathbb{R} Interval of Decrease: N/A
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = 0$
 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow \frac{0}{\infty}$
 as $x \rightarrow \infty$, $f(x) \rightarrow \frac{\infty}{\infty}$



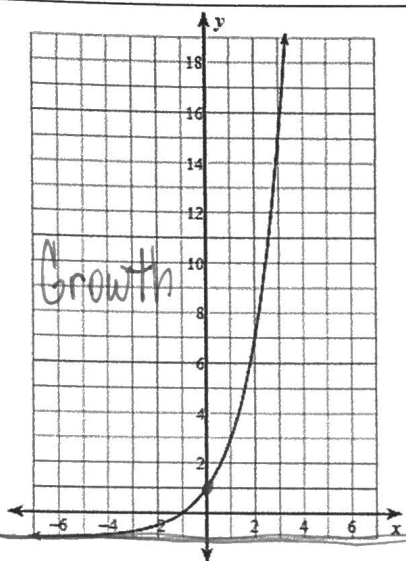
Domain: \mathbb{R} Range: $y > 0$
 X-intercept: N/A y-intercept: (0, 3)
 Interval of Increase: N/A Interval of Decrease: \mathbb{R}
 Maximum(s): N/A Minimum(s): N/A
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 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow \frac{\infty}{\infty}$
 as $x \rightarrow \infty$, $f(x) \rightarrow \frac{0}{\infty}$



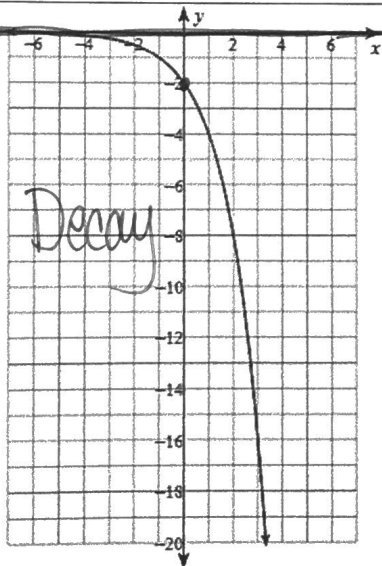
Domain: \mathbb{R} Range: $y > -2$
 X-intercept: (1, 0) y-intercept: (0, 2)
 Interval of Increase: N/A Interval of Decrease: \mathbb{R}
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = -2$
 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow \frac{\infty}{\infty}$
 as $x \rightarrow \infty$, $f(x) \rightarrow \frac{-2}{\infty}$
 ↑
 from asymptote



Domain: \mathbb{R} Range: $y > 1$
 X-intercept: N/A y-intercept: $(0, 1)$
 Interval of Increase: \mathbb{R} Interval of Decrease: N/A
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = 1$
 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow 1$ (Left)
 as $x \rightarrow \infty$, $f(x) \rightarrow \infty$ (Right)



Domain: \mathbb{R} Range: $y > -1$
 X-intercept: $(-1, 0)$ y-intercept: $(0, 1)$
 Interval of Increase: \mathbb{R} Interval of Decrease: N/A
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = -1$
 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow -1$
 as $x \rightarrow \infty$, $f(x) \rightarrow \infty$



Domain: \mathbb{R} Range: $y < 0$
 X-intercept: N/A y-intercept: $(0, -2)$
 Interval of Increase: N/A Interval of Decrease: \mathbb{R}
 Maximum(s): N/A Minimum(s): N/A
 Asymptote: $y = 0$
 End Behavior: as $x \rightarrow -\infty$, $f(x) \rightarrow 0$ (Left)
 as $x \rightarrow \infty$, $f(x) \rightarrow -\infty$ (Right)

5. A type of bacteria doubles every 36 hours. A petri dish starts out with 12 of these bacteria. Use the table below to calculate the rate of change for the interval [2, 5].

Days (x)	Amount of bacteria (f(x))
0	12
1	19
2	30
3	48
4	76
5	121
6	192

$$\begin{array}{c|c} x & y \\ \hline 2 & 30 \\ 5 & 121 \end{array} \quad +91$$

$$\frac{91}{3} = 30.33$$

6. Find the average rate of change for the following functions on the given interval.

a. $f(x) = \frac{3}{4}(2)^x, 2 \leq x \leq 5$

$$\begin{array}{c|c} x & y \\ \hline 2 & 3 \\ 5 & 24 \end{array} \quad +21$$

$$\frac{3}{4}(2)^2 = 3$$

$$\frac{3}{4}(2)^5 = 24$$

$$\frac{21}{3} = 7$$

b. $f(x) = 2(5)^x, 1 \leq x \leq 3$

$$\begin{array}{c|c} x & y \\ \hline 1 & 10 \\ 3 & 250 \end{array} \quad +240$$

$$2(5)^1 = 10$$

$$2(5)^3 = 250$$

$$\frac{240}{2} = 120$$

7. Use the table below to answer the following questions:

x	0	1	2	3	4
y	3	6			

a. Create three y-values that complete the table so the function would be linear.

x	0	1	2	3	4
y	3	6	9	12	15

b. Create three y-values that complete the table so the function would be exponential.

x	0	1	2	3	4
y	3	6	12	24	48

c. Create your own table of values for a function that is linear and has constant first differences of -3.

x	0	1	2	3	4	5
y	6	3	0	-3	-6	-9

-3 -3 -3

d. Create your own table of values for a function that is exponential and has constant ratio of 3.

x	1	2	3	4	5	6
y	6	27	81	243	729	2187

$$y = 3(3)^x$$