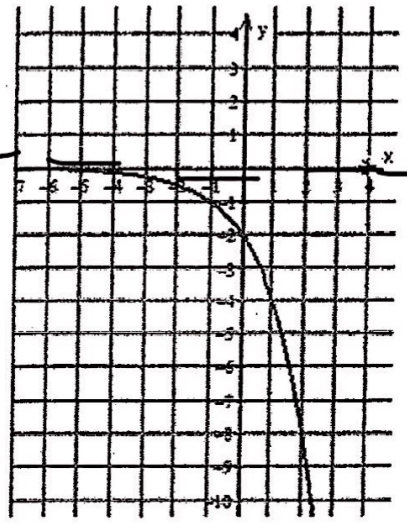
Quiz #2 Review
Exponential Functions

Name:_____

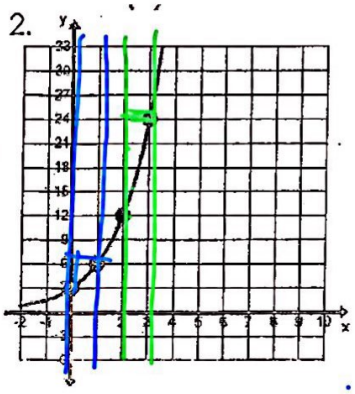
Describe the characteristics of the function below.

1.

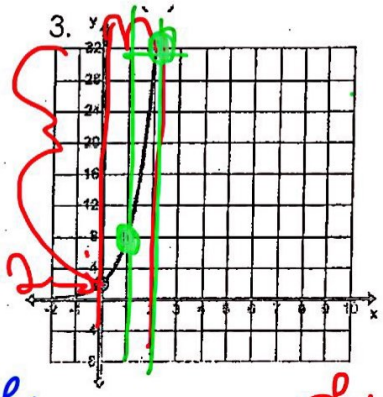


a. Domain: $\mathbb{R}$
b. Range: $(-\infty, 0)$
c. x-intercept: $\emptyset$
d. y-intercept: $(0, -2)$
e. Increasing: $\emptyset$
f. Decreasing: $(-\infty, \infty)$
g. Asymptote: $y = 0$
h. End Behavior: As $x \to -\infty$, $y \to 0$; As $x \to \infty$, $y \to -\infty$

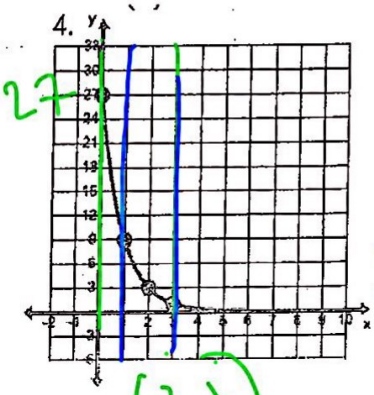
2.



3.



4.



Rate of Change → slope $\frac{\text{rise}}{\text{run}}$

[0, 1] $\frac{1}{1} = 1$

[2, 3] $\frac{4}{1} = 4$

Rate of Change → slope

[0, 2] $\frac{30}{2} = 15$

[1, 2] $\frac{24}{1} = 24$

Rate of Change

[0, 3] $\frac{-26}{3}$

[1, 3] $\frac{-8}{2} = -4$

Find the rate of change over the given intervals for the following function. $Y = 2^x + 6$

5. [-1, 3] ROC: 1.875

$y = 2^{-1} + 6 = 6.5 \rightarrow (-1, 6.5)$ (x_1, y_1)

$y = 2^3 + 6 = 14 \rightarrow (3, 14)$ (x_2, y_2)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{14 - 6.5}{3 - -1} = \frac{7.5}{4}$ acceptable

6. [2, 5] ROC: $\frac{28}{3}$

$y = 2^2 + 6 = 10$ $(2, 10)$ (x_1, y_1)

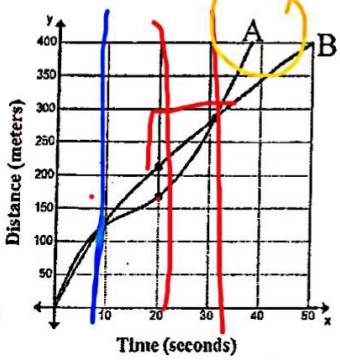
$y = 2^5 + 6 = 38$ $(5, 38)$ (x_2, y_2)

$= \frac{38 - 10}{5 - 2} = \frac{28}{3}$

Rate of Change Practice Worksheet

Name: _____ Date: _____

Below is the graph and table for 2 runners running the 400 meter hurdles race.

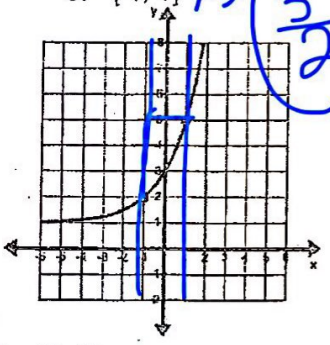


Time	Runner A	Runner B
0	0	0
9	120	120
20	168	213
31	287	287

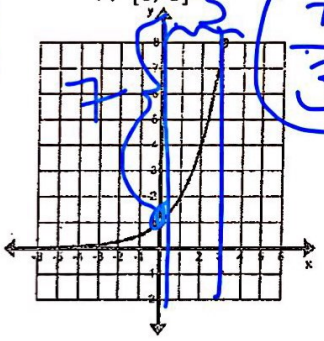
1. Which runner has a faster average speed for the first 9 seconds? same
2. Which runner has a faster average speed from 9 to 20 seconds? B
3. Which runner has a faster average speed from 20 to 31 seconds? A
4. Which runner has a faster average speed from 9 to 31 seconds? same
5. Which runner wins the race? How do you know? Runner A → less time to reach 400m

Find the average rate of change for each of the following graphs over the given interval.

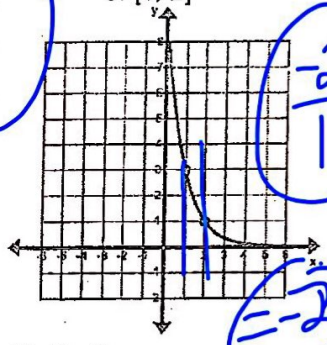
6. [-1, 1]



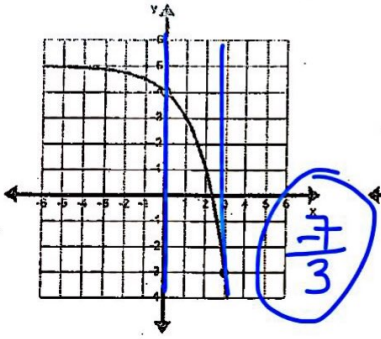
7. [0, 3]



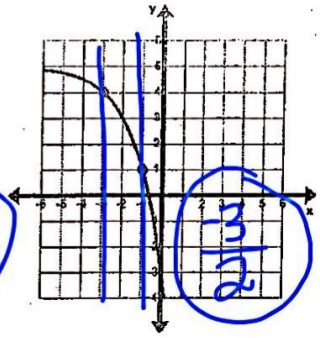
8. [1, 2]



9. [0, 3]



10. [-3, -1]



11. [0, 1]