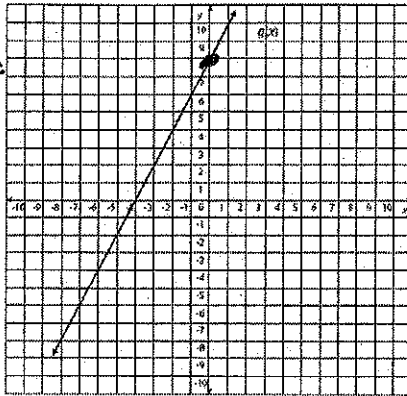


Comparing Functions

Name: _____

1. Which of the following statements is true about the functions $f(x)$ and $g(x)$, shown in the table and graph below?

x	f(x)
-2	1
0	7
2	13
4	19



- a. The function $f(x)$ has a greater y-intercept than the function $g(x)$.
 b. The function $g(x)$ has a greater rate of change than the function $f(x)$.
 c. The function $g(x)$ has a greater y-intercept than the function $f(x)$.
 d. The rates of change for both $f(x)$ and $g(x)$ are equal.

2. Which of the following statements is true about the functions $f(x)$ and $g(x)$?

$f(x) = -\frac{2}{3}x - 6$

x	g(x)
-4	10
0	7
4	4
8	1

$$\frac{7-10}{0-4} = \frac{-3}{-4} = \frac{3}{4}$$

- a. The rate of change of $f(x)$ is less than the rate of change of $g(x)$.
 b. The rate of change of $f(x)$ is greater than the rate of change of $g(x)$.
 c. The y-intercept of $f(x)$ is equal to the rate of change of $g(x)$.
 d. The y-intercept of $f(x)$ is greater than the rate of change of $g(x)$.

ROC - $\frac{2}{3}$
 ROC $\frac{3}{4}$

3 ROC Q

3. Which of the following functions model the data given in the table below?

x	y
2	-5
3	-7
4	-9
5	-11
6	-13

+1 $\left\{ \begin{array}{l} -2 \\ -2 \\ -2 \end{array} \right.$ Slope constant increase + decrease - linear

- a. Linear: $y = 2x - 5$
 b. Linear: $y = -2x - 1$
 c. Quadratic: $y = (x-2)^2 - 5$
 d. Exponential: $y = 2(5)^x$

4. Which of the following functions model the data given in the table below?

x	y
0	1
1	2
2	4
3	8
4	16

+1 $\left\{ \begin{array}{l} +1 \\ +2 \\ +6 \end{array} \right.$ NL E $\left\{ \begin{array}{l} x^2 \\ x^2 \\ x^2 \end{array} \right.$

- a. Linear: $y = 2x - 1$
 b. Linear: $y = 2x - 2$
 c. Quadratic: $y = (x-2)^2 + 4$
 d. Exponential: $y = (2)^x$

5. Which of the following functions model the data given in the table below?

x	f(x)
0	7
1	6
2	7
3	10
4	15

+1 $\left\{ \begin{array}{l} -1 \\ +1 \\ +3 \end{array} \right.$ NL NE

- a. Linear: $y = x + 6$
 b. Quadratic: $y = (x-1)^2 + 6$
 c. Quadratic: $y = (x-2)^2 + 7$
 d. Exponential: $y = (6)^x$

T E W
 a b c
 d
 P
 only
 piece 4 Quad.
 7Q

0 12 > x.75
 1 9
 2 6.75 > x.75
 3 5.0625

6. The change in the height of a ball from one bounce to the next if the ball is dropped from a height of 12 feet is 75% of its previous height. Which of the following is true?

- a. This is an example of exponential growth with the growth factor being 1.75.
- b. This is an example of exponential decay with the decay factor being .75.
- c. This is an example of linear growth with the rate of change being .75.
- d. This is an example of linear decay with the rate of change being -.75.

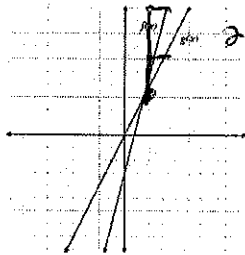
7. A taxi company charges a flat rate of \$3.50 plus .20 for each additional mile. Which of the following is true?

linear

- a. This is an example of exponential growth with the model being $y = 3.5(1.20)^x$.
- b. This is an example of exponential decay with the model being $y = 3.5(.20)^x$.
- c. This is an example of linear growth with the model being $y = .20x + 3.50$.
- d. This is an example of linear decay with the model being $y = -.20x + 3.50$.

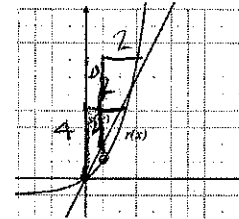
$.20x + 3.50$

8. Which of the following functions has a greater rate of change?



- a. $f(x)$ because its rate of change is 4 while the rate of change for $g(x)$ is 2
- b. $g(x)$ because its rate of change is 4 while the rate of change for $f(x)$ is 2
- c. $g(x)$ because its graph appears steeper than that of $f(x)$
- d. Neither, both graphs appear to rise at the same rate

9. Which of the following functions have a greater rate of change over the interval [1, 3]?



$s(x) \frac{2}{1}$
 $r(x) \frac{6}{2} = 3$

- a. $r(x)$ because its rate of change is 4 while the rate of change for $s(x)$ is 2 over the interval [1,3]
- b. $r(x)$ because its rate of change is 3 while the rate of change for $s(x)$ is 2 over the interval [1,3]
- c. $s(x)$ because its graph appears steeper than that of $r(x)$ over the interval [1, 3]
- d. Neither, both graphs appear to rise at the same rate

10. What type of model fits the data collection below?

$\{(-2, 5), (-1, 2), (0, 1), (1, 2), (2, 5)\}$

- a. Linear, because there is a constant rate of change
- b. Exponential, because there is a common ratio
- c. Quadratic, because there is a constant rate of change
- d. Quadratic, because the second difference is constant

11. Which of the following is the correct mathematical model for the data collection below?

$\{(-2, \frac{1}{9}), (-1, \frac{1}{3}), (0, 1), (1, 3), (2, 9)\}$

- a. $y = (3)^x$
- b. $y = (3)^{x-1}$
- c. $y = 3x + 1$
- d. $y = (x-1)^2 + 3$

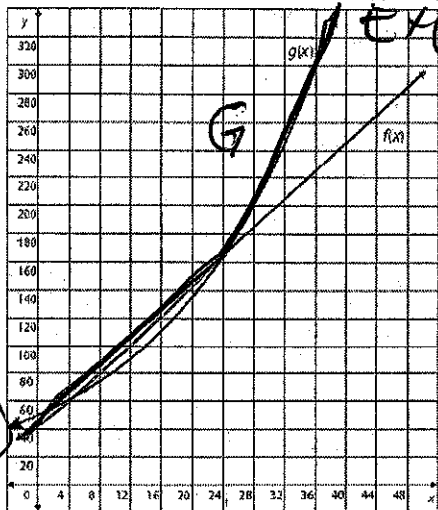
Linear \rightarrow

x3 x3

$y = (3)^x$
 y int

12.

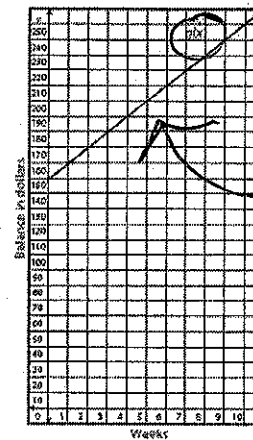
Which of the following statements is true about the functions $f(x)$ and $g(x)$ shown below?



Exponential
Over time
they win
eventually
greater always!

- a. The rate of change of the function $f(x)$ is always greater than the rate of change of the function $g(x)$.
- b. The rate of change of the function $g(x)$ will eventually be greater than the rate of change of the function $f(x)$.
- c. The rate of change of the function $f(x)$ is never greater than the rate of change of the function $g(x)$.

13. The function $f(x)$ represents the balance of a savings account with an initial deposit of \$500 and weekly deposits of \$25. A different savings account follows the function $g(x)$. The graph of function $g(x)$ is below.



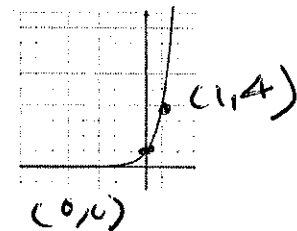
$f(x)$
 $y = 25x + 500$
 $y = 100 + 10x + 150$

Which of the following statements is true about the functions $f(x)$ and $g(x)$?

- a. The y -intercept of the function $f(x)$ is less than the y -intercept of the function $g(x)$.
- b. The y -intercept of the function $f(x)$ is greater than the y -intercept of the function $g(x)$.
- c. The y -intercept of the function $f(x)$ is equal to the y -intercept of the function $g(x)$.
- d. The y -intercepts cannot be determined.

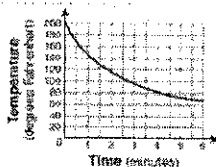
14. Which of the following is the explicit equation for the graph to the right?

- a. $y = (2)^x$
- b. $y = (3)^x$
- c. $y = (4)^x$
- d. $y = (5)^x$



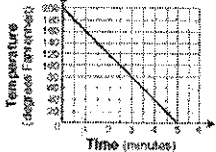
15. Antwaan leaves a cup of hot chocolate on the counter in his kitchen. Which graph is the best representation of the change in temperature of his hot chocolate over time?

a.



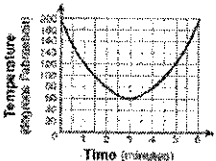
E

b.



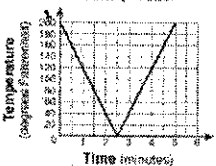
L

x



Q D Even R

x

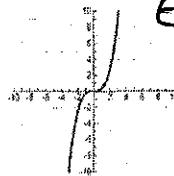


Absolute Value
DROP & RISES

For 16 - 20, decide if the function is Even, Odd or Neither.

16. $f(x) = \frac{1}{3}x^3$

Exp: 3

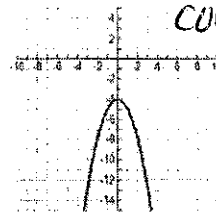


- a. Even b. Odd c. Neither

2Q
4Q: E₃
Even - Even Exp
Odd - odd Exp
1Q GRAPH
Even - y axis
Odd - origin

17. $f(x) = -x^2 - 4$

constants exponent
of
zero



- a. Even b. Odd c. Neither

18. $f(x) = 3x + 21$

- a. Even b. Odd c. Neither

19. $f(x) = 2x^4 + 3x^2 - 6$

- a. Even b. Odd c. Neither

20. $f(x) = -x^3 + 5x$

Odd

