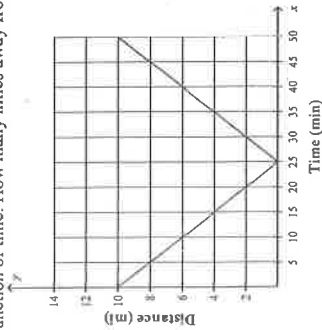


Name: _____

Topic 5 Review

1. What are the domain and range of $g(x) = 5|x|$?
2. Octavia rode the bus downtown. The graph shows Octavia's distance from the central bus station as a function of time. How many miles away from the central bus station did Octavia get on the bus?



Express each function as a piecewise function.

3. $f(x) = -8|x|$
4. $f(x) = 9|x|$

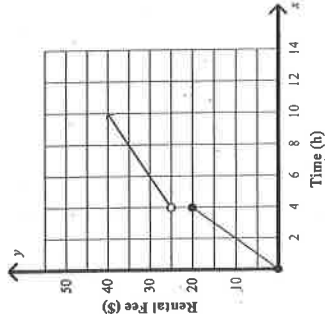
What is the graph of the absolute value function?

5. $y = -\frac{1}{3}|x|$
6. $y = -5|x| + 3$
7. $y = 2|x|$

8. Jack is tossing a bean bag back and forth with Tom. The function that describes the distance in feet the bean bag is from Jack is $f(t) = -\frac{1}{2}|t - 12| + 18$, with t as time in seconds.

- a. What is the rate of change for the interval $16 \leq t \leq 20$?
- b. What does the rate of change mean in terms of the bean bag's movement?

9. A bicycle rental shop has a two tier pricing system based on the number of hours a bicycle is rented, as shown in the graph.



- a. What is the hourly fee for renting a bicycle for 7 hours?
- b. What is the hourly fee for renting a bicycle for 4 hours?

Write an equation for each translation of $y = |x|$.

10. 12 units up
11. 16.5 units right

Find the vertex of the graph and find the axis of symmetry

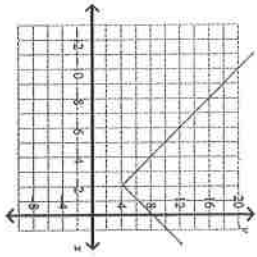
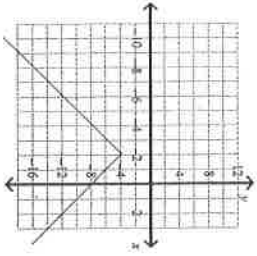
12. $f(x) = |x + 3| - 2$
13. $g(x) = |x - 5| + 8$
14. $f(x) = |x - 4| - 6$

15. Terrence is planning to go to at least 20 basketball games this season. If he buys tickets for between 1 and 24 games, each ticket is \$5 plus there is a \$4 processing fee for his purchase. If he buys a 2.5 game season ticket package, each ticket costs \$3 and there is no processing fee.

Determine whether this statement is true or false: It is a better deal for Terrence to buy the season ticket package even if he is only going to 20 games.

What is the equation of the absolute value function?

16.



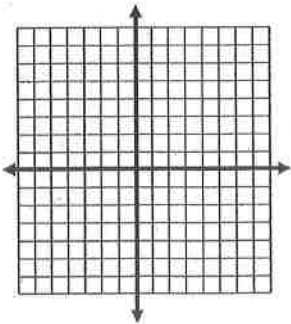
18.

$$f(x) = \begin{cases} 5 & x \leq -3 \\ 2x + 1 & -2 < x \leq 1 \\ -2x - 3 & x > 2 \end{cases}$$

$$f(-4) =$$

$$f(0) =$$

$$f(3) =$$



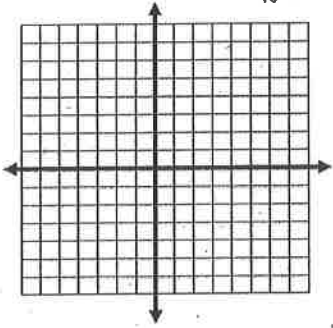
17.

$$f(x) = \begin{cases} -3x + 1 & x \leq 2 \\ 5x - 4 & x > 2 \end{cases}$$

$$f(-4) =$$

$$f(8) =$$

$$f(2) =$$



Compare the graph of each function with the graph of $f(x) = |x|$.

19. $g(x) = \frac{1}{7}|x|$

- a. translation down 7 units
- b. vertical stretch by factor of 7
- c. reflection across the x-axis
- d. vertical compression by factor of 7

20. $g(x) = -6|x|$

- a. translation right 6 units and reflection across the y-axis
- b. vertical compression by factor of 6 and reflection across the y-axis
- c. translation down 6 units and reflection across the x-axis
- d. vertical stretch by factor of 6 and reflection across the x-axis

21. Camp Canine is a kennel for boarding dogs while their owners are on vacation. The graph shows three tiers of boarding pricing. Ian boards his dog at Camp Canine. He is thinking about extending his vacation from 7 to 8 days. About how much will Ian save if he boards his dog 8 days instead of 7 days?

