Unit 3 Review Sheet   Name: __Key__

I. Identify the key features for the function provided.

1. What is the domain of the function? $[-5, 5)$

2. What is the range of the function? $[-3, 3]$

3. Where is the function increasing? $(-3, 0) \cup (3, 5)$

4. Where is the function decreasing? $(-5, -3) \cup (0, 3)$

5. Where is the function constant? never

6. What is the maximum of the function? 3 when x = 0

7. What is the minimum of the function? -3 when x = 3

8. What is the x-intercept? $(1.5, 0)$ and $(-3, 0)$

9. What is the y-intercept? $(0, 3)$

10. Does the graph represent a function? Yes

11. What is $f(2)$? -1

12. $f(x) = -3$ for what value of x? 3

13. What is $f(0)$? 3
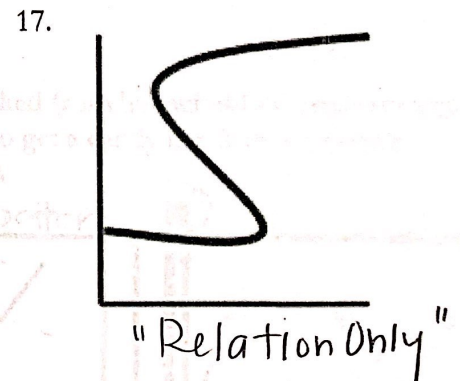
14. $f(x) = 1$ for what value(s) of x? -4, -2, 1
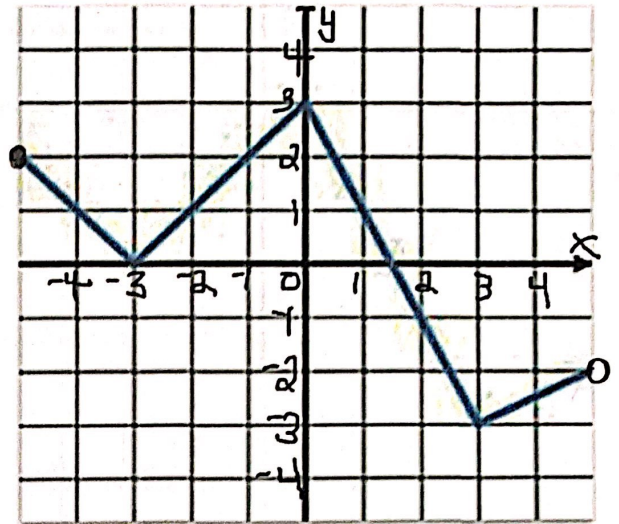
II. Determine whether each is a function or just a relation by writing "function" or "relation only" underneath each.
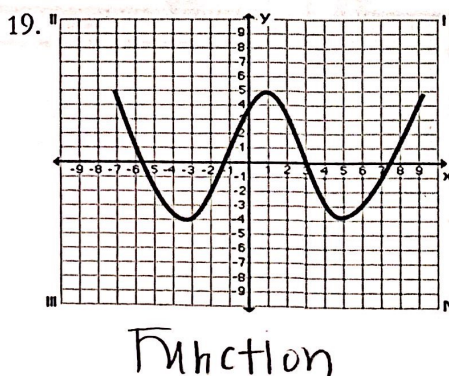
15.
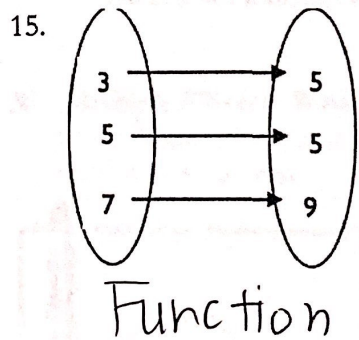
Function

16.

x	1	2	3	4
f(x)	3	12	48	192

Function

17.

"Relation Only"

18. $\{(-3, 1), (0, 6), (-3, 2), (5, -1)\}$

Relation Only

19.

Function

20.

x	y
-1	2
2	4
-3	2
5	3
-1	-2

Relation Only

III. Using the graph provided to answer the following questions:

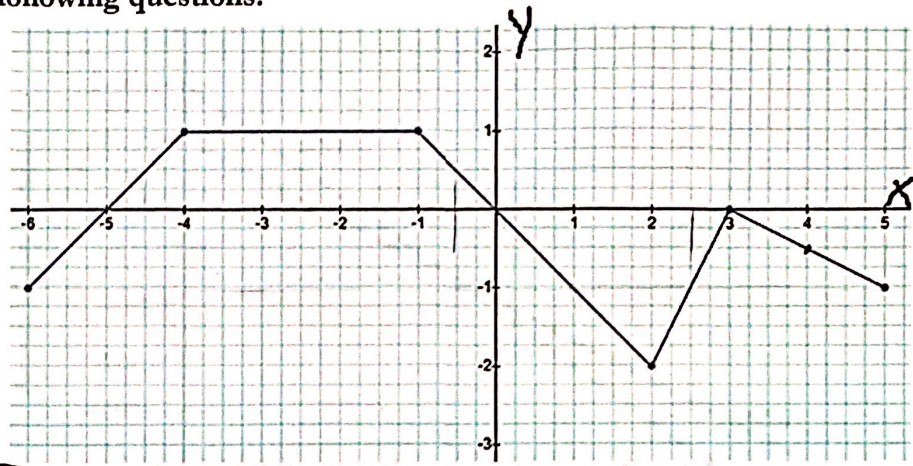21. $f(4) =$ ___-.5___

22. $f(-4) =$ ___1___

23. $f(1) =$ ___-1___

24. $f(0) =$ ___0___

25. $f(-3) =$ ___1___

26. If $f(x) = -2$ then x = ___2___

27. If $f(x) = 0.5$ then x = ___-.5___ ___-4.5___

28. If $f(x) = -1$ then x = ___-6___ ___1___ ___2.5___ ___5___

IV. Story Problems

29. **Multiple Choice: Which story could match the graph shown at the right?**

    A. Starting from home, Kyle jogs increasing his speed until he gets a cramp. He then slows his pace, begins walking, and returns home.

    B. Starting from home, Kyle rides his motorcycle to the lake, and stops for a swim before returning home.

    C. Starting from home, Kyle rides his motorcycle to the lake, then turns around and returns home, stopping for gas on the return trip.

    D. Starting from home, Kyle rides his bike up a steep hill, and then rides down a hill. He crosses a bridge before he returns home.
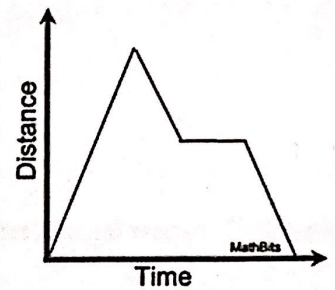
30. **Multiple Choice: Which graph below could represent the story:** Alison walked from her school's Commons area to her Math class. After class, she walked back to the Commons area, stopping to get a candy bar from a vending machine on the way.

    *I think D is a slightly better choice.

    OR

    A   **B**   **C**   **D**

V. Intersecting Graphs

31. Where is $a(x) = d(x)$

    $(10, 14000)$

32. On what interval is $a(x) > d(x)$?

    $[0, 10)$

33. On what interval is $a(x) < d(x)$?

    $(10, 24]$

34. What is $a(0) + d(0)$?

    $52,000$

35. Write the equation for $a(x)$.
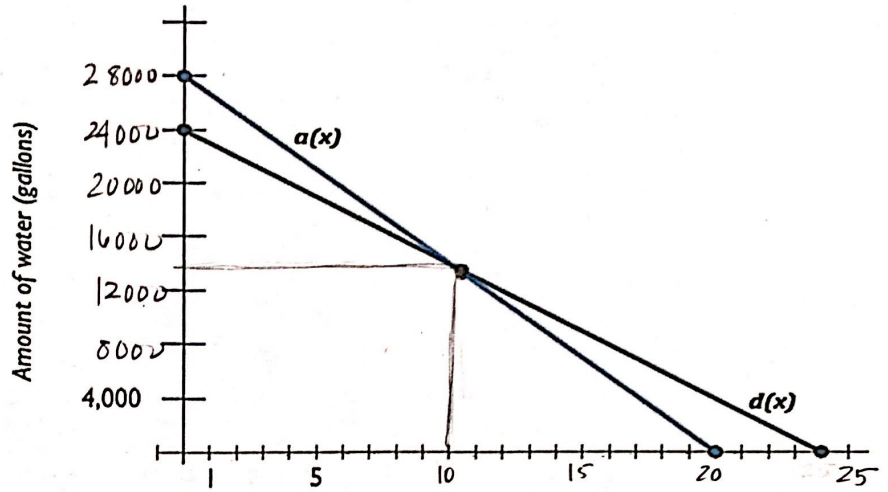
    $a(x) = -1400x + 28000$

36. Write the equation for $d(x)$.

    $d(x) = -1000x + 24000$

37. If $g(x) = a(x) + d(x)$, write the equation for $g(x)$.

    $g(x) = -2400x + 52000$

VI. Average Rate of Change

38. Multiple Choice: The table below shows the average weight of a type of plankton after several weeks. What is the average rate of change in weight of the plankton form week 8 to week 12?

    A. 0.0265 ounces per week
    B. 0.0375 ounces per week
    C. 0.055 ounces per week
    D. 0.1125 ounces per week

    $\dfrac{.49 - .04}{12 - 8} = \dfrac{.45}{4}$

    $= .1125$

Time(weeks)	Weight (ounces)
8	0.04
9	0.07
10	0.14
11	0.25
12	0.49

    .03, .07, .11, .24

    OR $\dfrac{.03 + .07 + .11 + .24}{4}$

VI. RSG Review

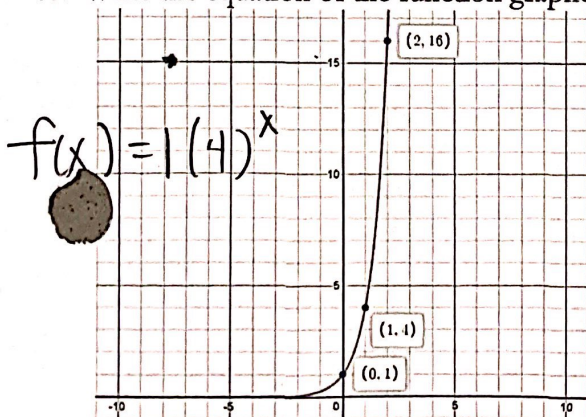39. Find the point of intersection for $f(x)$ and $g(x)$ if $f(x) = -x + 4$ and $g(x) = x + 6$.

    $-x + 4 = x + 6$ $f(x) = -(-1) + 4$ $g(x) = (-1) + 6$
    $-2x = 2$ $= 1 + 4$ $= 5$ $(-1, 5)$
    $x = -1$ $= 5$

40. Write the equation of the function graphed to the below:

    $f(x) = 1(4)^x$

    (2, 16)
    (1, 1)
    (0, 1)

41. If $f(x) = 2x - 3$, then $f(4) =$ __5__

    $f(4) = 2(4) - 3$
    $= 8 - 3$

42. If $f(x) = 2x - 3$, then $f(-1) =$ __-5__

    $f(-1) = 2(-1) - 3$
    $= -2 - 3$