

Name \_\_\_\_\_

# MidTerm Review

1. What is the classification of each function?

- a.  $f(x) = |1700x - 1120|$
- b.  $f(x) = -9x^2 - 12x + 1$
- c.  $f(x) = -3^x + 9$
- d.  $f(x) = 9x - 20$

2. Label each function as constant, increasing, decreasing, or both.

- a.  $f(x) = \left(\frac{1}{2}\right)^x + 2$
- b.  $f(x) = x^2 + 2x - 1$
- c.  $f(x) = -4x^2 + 5x + 7$
- d.  $f(x) = -x + 3.5$
- e.  $f(x) = 8$

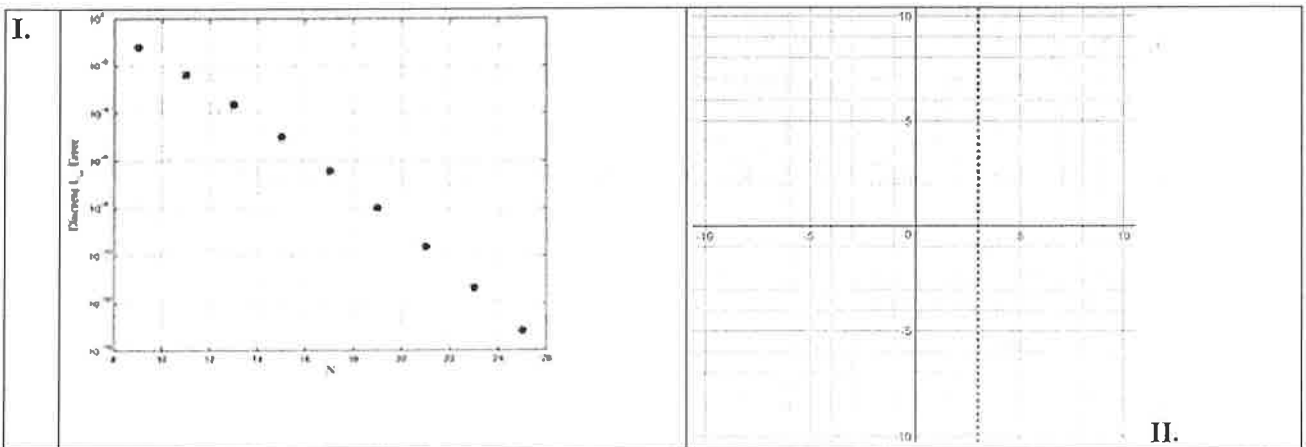
3. Label each function as having an absolute minimum, absolute maximum, both, or neither

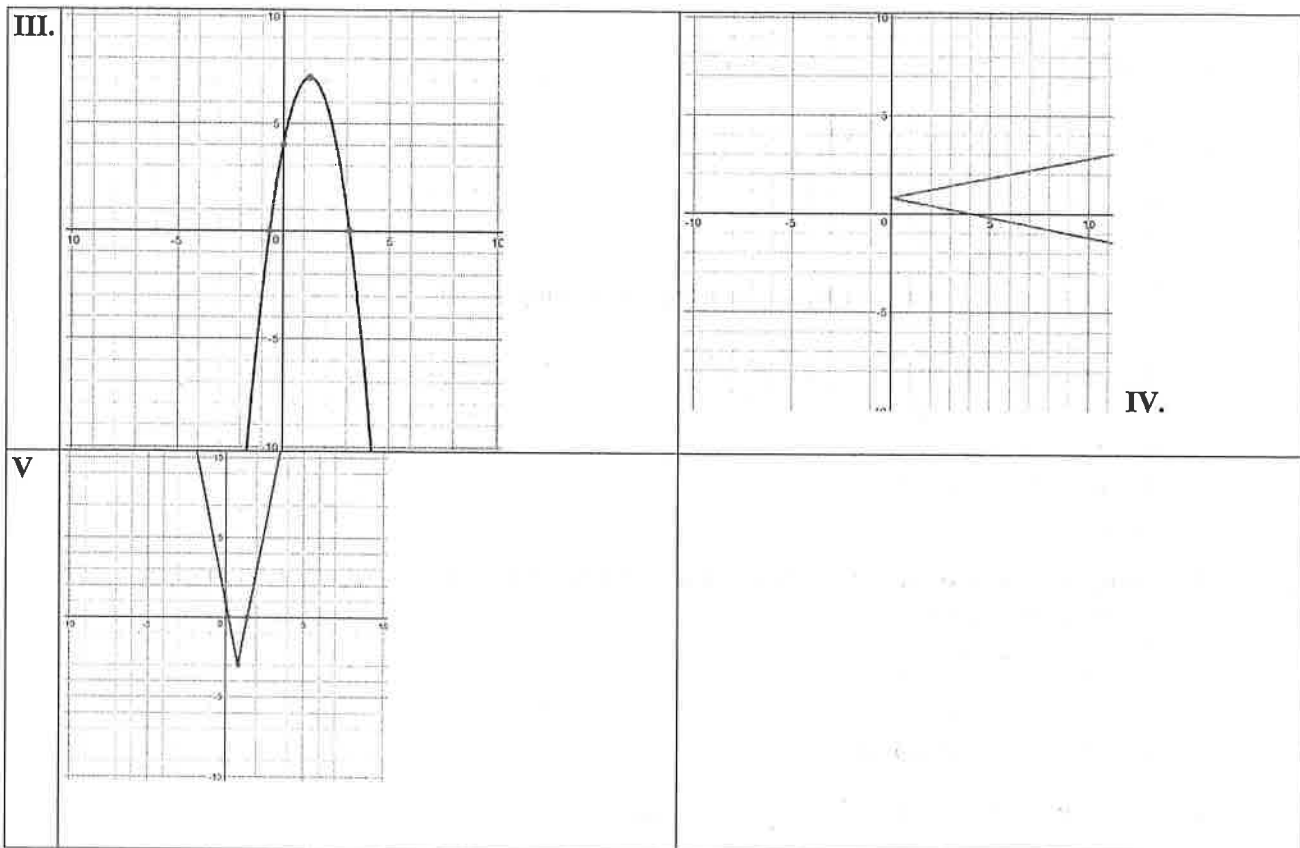
- a.  $f(x) = |-2x + 3.5| - 1$
- b.  $f(x) = |-3|$
- c.  $f(x) = -x^2 + 2x - 1$
- d.  $f(x) = (-2)^x$
- e.  $f(x) = 3x^2 + 10x + 6$

4. Determine if the graph: *(graphs on #5)*

- a. Is a function or is not a function. If it is not a function you do not need to answer parts b, c, or d.
- b. Is discrete or continuous
- c. Is increasing, decreasing, or neither
- d. Has an absolute minimum, absolute maximum, both, or neither
- e. What function family it belongs to

5.





6. Solve the following compound inequalities.

- a.  $-56 < 8(x + 2) < 32$
- b.  $-165 < -11x \leq 33$
- c.  $25 < 3x - 11 < 31$
- d.  $-14 < -2(x + 3) < 98$

7. Solve the following equations.

- a.  $-x + 8 = 3x - 4$
- b.  $2(x + 5) - 15 = 33$
- c.  $-4x + 11 = 8$
- d.  $1(x + 14) - 12 = -20$

8. What is the rate of change between the set of points? Round to the nearest tenth.

- a.  $(-11, 17)$  and  $(12, 52)$
- b.  $(50, -780)$  and  $(300, -400)$
- c.  $(-10, -5)$  and  $(-8, -21)$
- d.  $(-23, 2)$  and  $(6, 25)$

9. Solve the linear absolute value equations.

- a.  $|-x + 8| + 2 = 7$
- b.  $2|x + 5| - 15 = 33$
- c.  $-3|4x + 11| = 9$
- d.  $5 - 6|x - 9| = -19$

10. Write an explicit and recursive formula for each sequence. Find the 25<sup>th</sup> term for each sequence.

- a. 8, 5, 2, -1, -4, ...
- b. 3, 4.5, 6.75, 10.125, ...
- c. -11, -4, 3, 10, ...
- d. -6, 18, -54, 162, ...

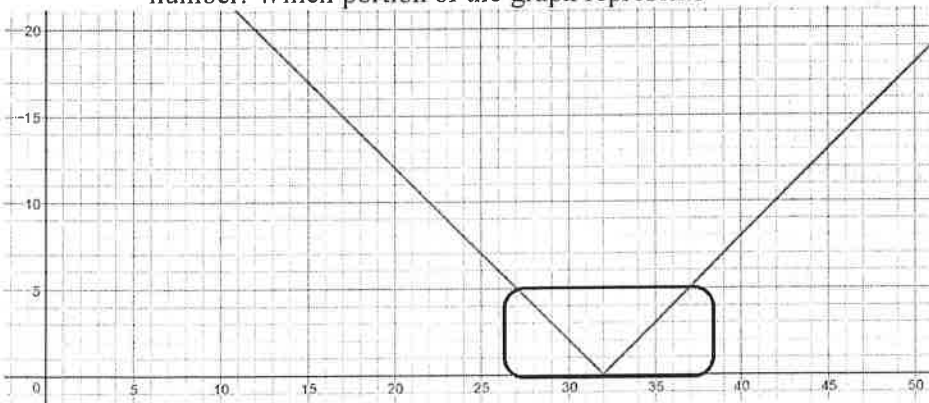
11. Write the following in function form.

- a.  $a_n = -11 + 5(n - 1)$
- b.  $g_n = 5\left(-\frac{1}{3}\right)^{n-1}$
- c.  $g_n = 2 * 4^{n-1}$
- d.  $a_n = 27 - 3(n - 1)$

12. You have \$100 to spend on lunch over the next 20 days. The first five days, you spend \$10 on lunch each day. You pack your lunch for the next week and spend nothing. You then spend \$5 on lunch each of the remaining days until you have spent all your money. The function graphed models the amount of money left after  $x$  days.

- a. What is the independent quantity?
- b. What is the dependent quantity?
- c. Graph the scenario.
- d. What type of function is this?

13. There is a jelly bean guessing contest at the fair. You win a prize if your guess is within 5 beans of the correct number. Which portion of the graph represents the winners? Write your answer as an inequality in terms of  $x$ .



14. Graph the following inequalities.

- a.  $-4 < x < 12$  |
- b.  $x \leq 5$  or  $x > 8$  |
- c.  $25 < x$  or  $x < 26$  |
- d.  $-14 < x < 45$  |

15. The length a rectangle is 4 ft. Write a function for the width of the rectangle in terms of A, the area.  
 $A = L * W$

16. The mass of an object is 56 grams. Write a function to represent the volume of the object in terms of its density, d.  
 $D = \frac{m}{v}$

17. Evaluate the following functions at the given x value.

a.  $f(x) = 3x^2 - 5x + 9$  at  $x = -2$

b.  $f(x) = \frac{1}{11}x + 2.5$  at  $x = 33$

c.  $f(x) = 59 - 7x$  at  $x = 6$

d.  $f(x) = |x - 10|$  at  $x = -23$

18. In the following formulas, solve for the letter in bold.

a.  $A = \mathbf{L} * W$

b.  $A = .5 * \mathbf{B} * H$

c.  $S = \frac{d}{\mathbf{t}}$

19. A large box of cereal contains 21.6 oz of cereal. A small box only contains 16.5 oz. Write a function to model the total amount of cereal with large boxes, l, and small boxes, s.

20. Use linear regression to make predictions. Round any decimals to the nearest tenth

a.

Patrons	32	33	40	81
Revenue	480	495	605	1207

Predict the company's revenue with 121 patrons.

b.

Temperature degrees	25	22	17	14
Elevation ft	1600	1800	2000	2200

Predict the temperature at 3000 ft

c.

Height ft	5.6	4.8	6.1	5.75
Weight lbs	145	110	180	153

Predict the weight of a 6.9 ft man

21. Identify the x and y intercepts.

a.  $3x + 7y = 42$

b.  $y = -11x + 12$

22. Which r-value is the best fit?

a.  $r = .89$

b.  $r = .5$

c.  $r = -.6$

d.  $r = -.98$

23. Change to the other form. (Standard or Slope-intercept)

$y = -2x + 12$

b.  $4x - 5y = 100$

24. Use the table to find the following

a.  $f(x) = 12$ ,  $x =$  \_\_\_\_\_

b.  $f(3) =$  \_\_\_\_\_

c.  $f(5) =$  \_\_\_\_\_

25. Use  $g(x) = -25x + 52$  to find the following:

a.  $g(6) =$  \_\_\_\_\_

b.  $g(x) = 200$ ,  $x =$  \_\_\_\_\_

c.  $g(-11) =$  \_\_\_\_\_

x	F(x)
3	5
5	9
7	12