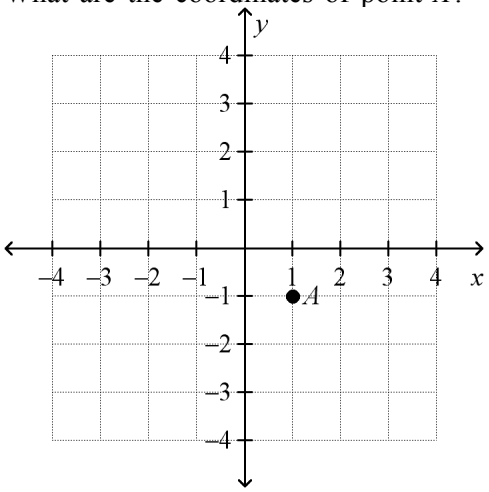
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Algebra 1 Chapter 04 Review

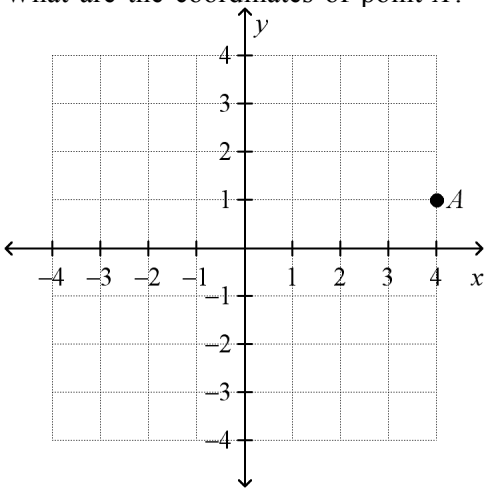
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. What are the coordinates of point A?



a. $(-1, 1)$ b. $(1, 1)$ c. $(-1, -1)$ d. $(1, -1)$

____ 2. What are the coordinates of point A?



a. $(4, -1)$ b. $(4, 1)$ c. $(-4, 1)$ d. $(-4, -1)$

____ 3. Write the coordinates of the point that is 9 units to the left of the y-axis and 6 units above the x-axis.
a. $(-9, 6)$ b. $(9, 6)$ c. $(-9, -6)$ d. $(6, -9)$

____ 4. Evaluate $f(x) = \frac{1}{3}x$ for $x = 4$.

a. $1\frac{1}{3}$ b. $\frac{1}{12}$ c. $\frac{3}{4}$ d. -12

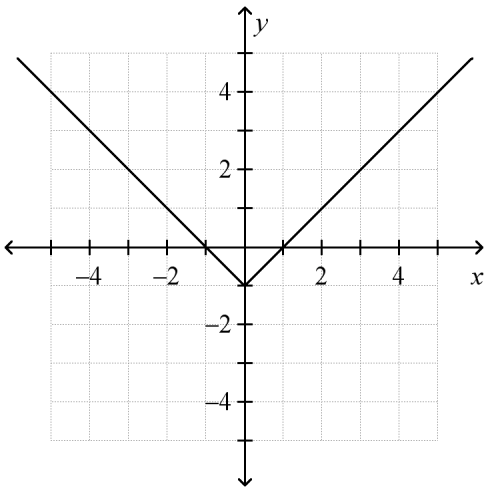
_____ 5. Evaluate $f(x) = -x^2 + 1$ for $x = -3$.

a. -9 b. -4 c. -8 d. 4

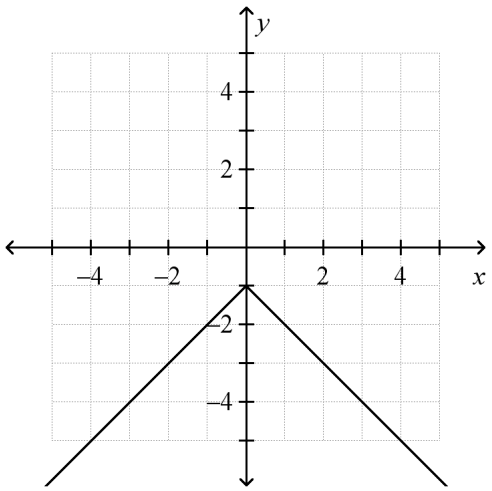
Graph the function.

_____ 6. $y = |x| - 1$

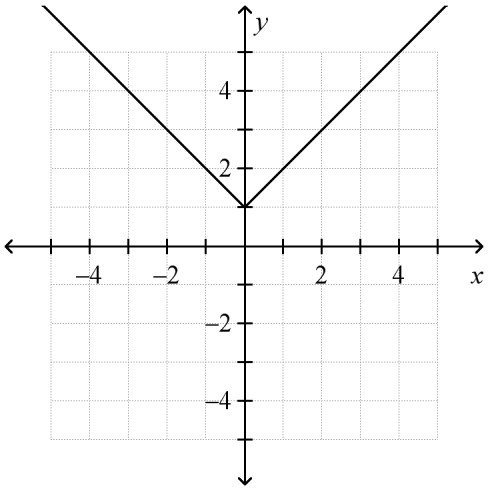
a.



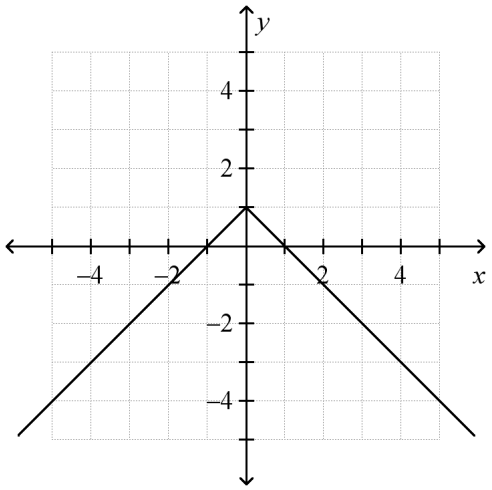
c.



b.

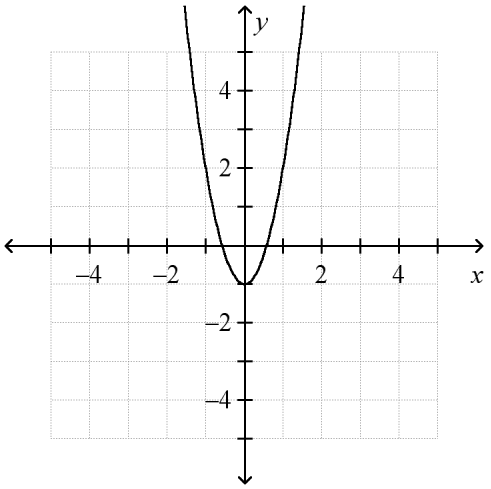


d.

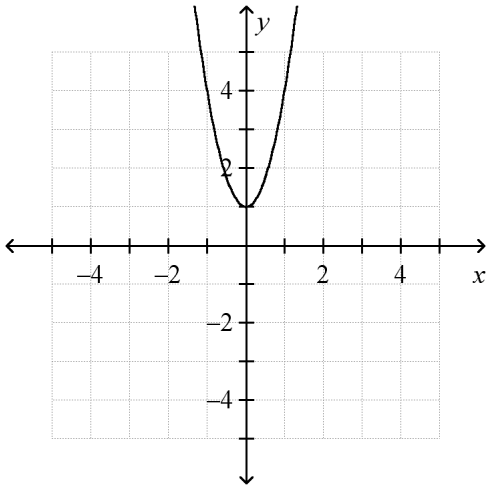


____ 7. $y = -3x^2 - 1$

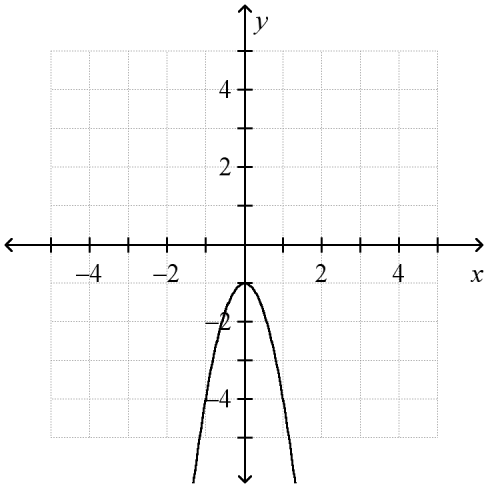
a.



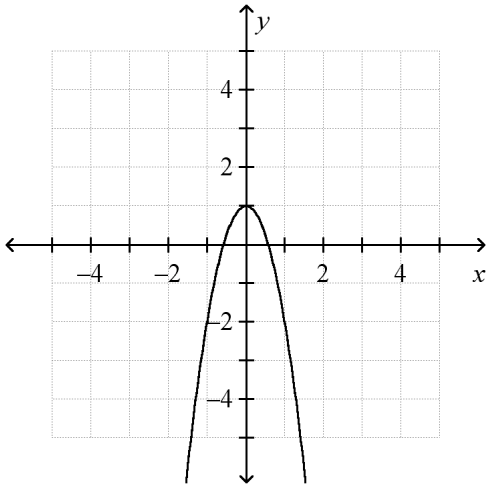
c.



b.



d.



Write a function rule for the table.

____ 8.

x	$f(x)$
2	–8
3	–12
4	–16
5	–20

a. $f(x) = -4x$ b. $f(x) = 4x$ c. $f(x) = x - 4$ d. $f(x) = x + 4$

Find the constant of variation k for the direct variation.

____ 9. $4x = -6y$

a. $k = -\frac{2}{3}$ b. $k = \frac{2}{3}$ c. $k = -\frac{3}{2}$ d. $k = -6$

____ 10. $3x + 5y = 0$

a. $k = -\frac{3}{5}$ b. $k = 5$ c. $k = \frac{3}{5}$ d. $k = \frac{5}{3}$

____ 11.

x	$f(x)$
−1	2
0	0
2	−4
5	−10

a. $k = -1.5$ b. $k = 2$ c. $k = -0.5$ d. $k = -2$

____ 12. The total cost of gasoline varies directly with the number of gallons purchased. Gas costs $1.89 per gallon. Write a direct variation to model the total cost c for g gallons of gas.

a. $g = 1.89c$ b. $c = g + 1.89$ c. $c = 1.89g$ d. $c = \frac{g}{1.89}$

____ 13. The distance a spring will stretch varies directly with how much weight is attached to the spring. If a spring stretches 9 inches with 100 pounds attached, how far will it stretch with 90 pounds attached? Round to the nearest tenth of an inch.

a. 8.9 in. b. 10 in. c. 8.1 in. d. 9.1 in.

____ 14. The time t required to drive a certain distance varies inversely with the speed r. If it takes 2 hours to drive the distance at 30 miles per hour, how long will it take to drive the same distance at 50 miles per hour?

a. 60 hours
b. 1.2 hours
c. 750 hours
d. about 3.33 hours

____ 15. An enclosed gas exerts a pressure P on the walls of a container. This pressure is directly proportional to the temperature T of the gas. If the pressure is 7 lb per square inch. when the temperature is 420ºF, find the constant of variation.

a. 49 b. $\frac{1}{60}$ c. $\frac{1}{49}$ d. 60

____ 16. Find the constant of variation k for the inverse variation. Then write an equation for the inverse variation.

$y = 4.5$ when $x = 3$

a. $k = 13.5$; $13.5y = x$
b. $k = 1.5$; $y = 1.5x$
c. $k = 1.5$; $y = \frac{1.5}{x}$
d. $k = 13.5$; $xy = 13.5$

Use inductive reasoning to describe the pattern. Then find the next two numbers in the pattern.

____ 17. $-9, -4, 1, 6, \ldots$

a. add 5 to the previous term; 11, 16
b. multiply the previous term by 5; 30, 150
c. subtract 5 from the previous term; 1, −4
d. multiply the previous term by 5; 11, 150

____ 18. –5, –10, –20, –40, . . .
a. multiply the previous term by 2; –80, –160
b. add –5 to the previous term; –35, –30
c. subtract 5 from the previous term; –80, –160
d. multiply the previous term by –2; 80, –160

Find the common difference of the arithmetic sequence.

____ 19. 5, 5.3, 5.6, 5.9, . . .
a. 0.3 b. 1.1 c. –1.1 d. 10.3

____ 20. The common difference in an arithmetic sequence is _____ a positive number.
a. sometimes b. always c. never

Find the first, fourth, and tenth terms of the arithmetic sequence described by the given rule.

____ 21. $A(n) = -3 + (n - 1)(-2.2)$
a. –3, –11.8, –25
b. 0, –6.6, –19.8
c. –3, –9.6, –22.8
d. –2.2, –11.8, –19.8

Find the domain.

____ 22. $f(x) = \dfrac{1}{\sqrt{x+7}}$
a. $\{x : x > -7\}$
b. $\{x : x > 7\}$
c. $\{x : x < -7\}$
d. $\{x : x < 7\}$

Short Answer

23. An employee receives a weekly salary of $340 and a 6% commission on all sales.
a. Write a rule to describe the function $f(d)$ that gives weekly earnings in terms of d dollars in sales.
b. Find the employee's earnings for a week with $660 total sales.
c. What were the employee's total sales for a week in which her earnings were $1300?

For the data in the table, tell whether *y* varies directly with *x*. If it does, write an equation for the direct variation.

24.

x	*y*
0	0
1	4
2	8
3	12

Essay

25. During a clothing store's Bargain Days, the regular price for T-shirts is discounted by $5. There is a state sales tax of 5%, and the $5 discount is applied before the sales tax is calculated.
    a. Write an expression that shows the regular price r of a T-shirt minus the $5 discount.
    b. Write a rule for the function $p(r)$ that expresses the final price p of a T-shirt with the discount applied and sales tax added.
    c. How much would you pay during Bargain Days for a shirt regularly priced at $15.50?

26. A computer consultant is thinking of renting office space in a building that charges $28 per square foot per month for office space. She estimates that electricity, telephone, and supplies will cost $500 per month.
    a. Define variables and write an equation that describes the consultant's monthly office expenses.
    b. Do her monthly office expenses vary directly with the amount of office space she could rent?
    c. What is the greatest amount of space she can afford if she wants to spend no more than $4000 a month on rent and other expenses? Show your work.

Algebra 1 Chapter 04 Review
Answer Section

MULTIPLE CHOICE

1. ANS: D PTS: 1 DIF: L1
   REF: 4-1 Graphing on the Coordinate Plane
   OBJ: 4-1.1 Graphing Points on the Coordinate Plane STA: CA A1 6.0
   TOP: 4-1 Example 1 KEY: graphing | ordered pair
2. ANS: B PTS: 1 DIF: L1
   REF: 4-1 Graphing on the Coordinate Plane
   OBJ: 4-1.1 Graphing Points on the Coordinate Plane STA: CA A1 6.0
   TOP: 4-1 Example 1 KEY: graphing | ordered pair
3. ANS: A PTS: 1 DIF: L2
   REF: 4-1 Graphing on the Coordinate Plane
   OBJ: 4-1.1 Graphing Points on the Coordinate Plane STA: CA A1 6.0
   KEY: graphing | ordered pair
4. ANS: A PTS: 1 DIF: L2
   REF: 4-3 Function Rules, Tables, and Graphs
   OBJ: 4-3.1 Function Rules to Tables and Graphs
   STA: CA A1 16.0 | CA A1 17.0 | CA A1 18.0 TOP: 4-3 Example 1
   KEY: function
5. ANS: C PTS: 1 DIF: L2
   REF: 4-3 Function Rules, Tables, and Graphs
   OBJ: 4-3.1 Function Rules to Tables and Graphs
   STA: CA A1 16.0 | CA A1 17.0 | CA A1 18.0 TOP: 4-3 Example 1
   KEY: function |
6. ANS: A PTS: 1 DIF: L2
   REF: 4-3 Function Rules, Tables, and Graphs
   OBJ: 4-3.1 Function Rules to Tables and Graphs
   STA: CA A1 16.0 | CA A1 17.0 | CA A1 18.0 TOP: 4-3 Example 4
   KEY: graphing | function | absolute value
7. ANS: B PTS: 1 DIF: L3
   REF: 4-3 Function Rules, Tables, and Graphs
   OBJ: 4-3.1 Function Rules to Tables and Graphs
   STA: CA A1 16.0 | CA A1 17.0 | CA A1 18.0 TOP: 4-3 Example 4
   KEY: graphing | function | quadratic function
8. ANS: A PTS: 1 DIF: L2 REF: 4-4 Writing a Function Rule
   OBJ: 4-4.1 Writing Function Rules STA: CA A1 16.0 TOP: 4-4 Example 1
   KEY: rule | function
9. ANS: A PTS: 1 DIF: L2 REF: 4-5 Direct Variation
   OBJ: 4-5.1 Writing the Equation of a Direct Variation STA: CA A1 15.0 | CA A1 16.0
   TOP: 4-5 Example 1 KEY: direct and inverse variation | constant of variation
10. ANS: A PTS: 1 DIF: L2 REF: 4-5 Direct Variation
    OBJ: 4-5.1 Writing the Equation of a Direct Variation STA: CA A1 15.0 | CA A1 16.0
    TOP: 4-5 Example 1 KEY: direct and inverse variation | constant of variation

11. ANS: D PTS: 1 DIF: L2 REF: 4-5 Direct Variation
OBJ: 4-5.1 Writing the Equation of a Direct Variation STA: CA A1 15.0 | CA A1 16.0
TOP: 4-5 Example 4 KEY: rule | function | direct and inverse variation
12. ANS: C PTS: 1 DIF: L2 REF: 4-5 Direct Variation
OBJ: 4-5.1 Writing the Equation of a Direct Variation STA: CA A1 15.0 | CA A1 16.0
TOP: 4-5 Example 3 KEY: direct and inverse variation
13. ANS: C PTS: 1 DIF: L2 REF: 4-5 Direct Variation
OBJ: 4-5.2 Proportions and Equations of Direct Variations STA: CA A1 15.0 | CA A1 16.0
TOP: 4-5 Example 5
KEY: direct and inverse variation | word problem | problem solving
14. ANS: B PTS: 1 DIF: L3 REF: 4-6 Inverse Variation
OBJ: 4-6.1 Solving Inverse Variations STA: CA A1 15.0 | CA A1 16.0
TOP: 4-6 Example 3
KEY: word problem | problem solving | constant of variation | inverse variation
15. ANS: B PTS: 1 DIF: L3 REF: 4-6 Inverse Variation
OBJ: 4-6.1 Solving Inverse Variations STA: CA A1 15.0 | CA A1 16.0
TOP: 4-6 Example 3
KEY: word problem | problem solving | constant of variation | inverse variation
16. ANS: D PTS: 1 DIF: L3 REF: 4-6 Inverse Variation
OBJ: 4-6.1 Solving Inverse Variations STA: CA A1 15.0 | CA A1 16.0
KEY: constant of variation | inverse variation
17. ANS: A PTS: 1 DIF: L2 REF: 4-7 Describing Number Patterns
OBJ: 4-7.1 Inductive Reasoning and Number Patterns STA: CA A1 24.1
TOP: 4-7 Example 1 KEY: inductive reasoning | conjecture | arithmetic sequence
18. ANS: A PTS: 1 DIF: L2 REF: 4-7 Describing Number Patterns
OBJ: 4-7.1 Inductive Reasoning and Number Patterns STA: CA A1 24.1
TOP: 4-7 Example 1 KEY: inductive reasoning | conjecture | geometric sequence
19. ANS: A PTS: 1 DIF: L2 REF: 4-7 Describing Number Patterns
OBJ: 4-7.1 Inductive Reasoning and Number Patterns STA: CA A1 24.1
KEY: arithmetic sequence | sequence | common difference
20. ANS: A PTS: 1 DIF: L3 REF: 4-7 Describing Number Patterns
OBJ: 4-7.1 Inductive Reasoning and Number Patterns STA: CA A1 24.1
KEY: arithmetic sequence | sequence | common difference | reasoning
21. ANS: C PTS: 1 DIF: L3 REF: 4-7 Describing Number Patterns
OBJ: 4-7.1 Inductive Reasoning and Number Patterns STA: CA A1 24.1
TOP: 4-7 Example 2
KEY: arithmetic sequence | common difference | analyzing a pattern
22. ANS: A PTS: 1 DIF: L2
REF: 4-3 Function Rules, Tables, and Graphs
OBJ: 4-3.2 Finding the Domain of a Function
STA: CA A1 16.0 | CA A1 17.0 | CA A1 18.0 TOP: 4-3 Example 5

SHORT ANSWER

23. ANS:
a. $f(d) = 340 + 0.06d$
b. \$379.60
c. \$16,000

PTS: 1 DIF: L4 REF: 4-4 Writing a Function Rule
OBJ: 4-4.1 Writing Function Rules STA: CA A1 16.0
KEY: function | multi-part question | word problem | problem solving

24. ANS:
yes; $y = 4x$

PTS: 1 DIF: L2 REF: 4-5 Direct Variation
OBJ: 4-5.2 Proportions and Equations of Direct Variations STA: CA A1 15.0 | CA A1 16.0
TOP: 4-5 Example 4 KEY: direct and inverse variation

ESSAY

25. ANS:
[4] **a.** $r - 5$
b. $p(r) = 1.05(r - 5)$ OR $p(r) = r - 5 + 0.05(r - 5)$
c. \$11.03
[3] answers correct except for one small error
[2] two parts correct
[1] one part correct

PTS: 1 DIF: L4 REF: 4-4 Writing a Function Rule
OBJ: 4-4.1 Writing Function Rules STA: CA A1 16.0
KEY: function | extended response | rubric-based question | word problem | problem solving

26. ANS:
[4] **a.** Let E = monthly expenses, and let a = square feet of office space; $E = 28a + 500$
b. no
c. 125 square feet
[3] two parts correct
[2] one part correct
[1] correct answers without work shown

PTS: 1 DIF: L4 REF: 4-5 Direct Variation
OBJ: 4-5.1 Writing the Equation of a Direct Variation STA: CA A1 15.0 | CA A1 16.0
KEY: direct and inverse variation | rubric-based question | word problem | extended response | problem solving