

Intermediate Algebra

Review for Exam 1

Summer 2008

Use mathematical symbols to translate the phrase.

- 1) a) 9 more than half of some number
- b) 10 less than a number
- c) 37 percent of some number
- d) 7 more than 46 percent of some number

Evaluate the expression.

- 2) a) $15x - y$, for $x = 8$ and $y = 9$
- b) $m + n(9 + n^2)$, for $m = 16$ and $n = 3$
- c) $4(m + 17n) \div m$, for $m = 2$ and $n = 10$

Calculate using the rules for order of operations.

- 3) a) $\frac{8 \cdot 10 - 7^3}{4 + 3 \cdot 4}$
- b) $11 - \sqrt{2 + 7} + 9 \div 4 \cdot 6^3$
- c) $|3^3 - 5|^2 - 6$

Solve the equation.

- 4) $30 = -3x + 6$
- 5) $24x - 3 = 13$
- 6) $13(5c - 6) = 5c - 3$
- 7) $6x - (4x - 1) = 2$
- 8) $7x + 5(3x - 6) = -4 - 4x$
- 9) $\frac{2}{5}x - \frac{1}{3}x = 4$
- 10) $2.01x - 13.052 = 1.93x - 19.452$

Classify the given equation as a conditional equation, an identity, or a contradiction.

- 11) a) $5(3f + 2) = 15f + 10$
- b) $18m + 9 = 3(4m - 11)$
- c) $8k + 55 = 2(4k + 26)$

Solve the problem.

- 12) A rectangle's length is twice its width and its perimeter is 84 m. Find the dimensions.
- 13) One angle of a triangle is 5 times as great as a second angle. The third angle measures 12° less than twice the second angle. Find the measures of the angles.

- 14) An employee earned \$18,925 this year. This was a raise of 9% over last year. What was his salary last year?
- 15) Assume that "The Dreaded Dree," a boat that tours the Colorado River, typically runs at 6 mph in still water. If the Colorado is flowing at 3 mph, how long will it take "The Dreaded Dree" to cruise 2 miles upstream?
- 16) John wants to invest money to earn \$129 in 9 months. He found an investment at 8%. How much must he invest?
- 17) A garden is being constructed in the shape of a trapezoid. Given that the height of the trapezoid is 18 m, the length of one of the bases is 11 m, and the area of the garden is 315 m^2 , what is the length of the unknown base? (Hint: Area of a trapezoid = $\frac{1}{2}h(b_1 + b_2)$)

Solve the formula for the indicated letter.

- 18) a) $C = m + mbx$, for m
- b) $A = \frac{1}{2}bh$, for b
- c) $F = \frac{9}{5}C + 32$, for C

Multiply and simplify.

- 19) a) $4^7 \cdot 4^2$ c) $x^5 \cdot x^0$
- b) $7a^8 \cdot 3a^3$ d) $(x^7y^6)(x^3y^2z^0)$

Simplify. Write the answer using positive exponents only.

- 20) a) $9^{-7} \cdot 9^{-4}$
- b) $x^{-4} \cdot x^2 \cdot x^{-7}$
- c) $(7x^{-8}y^{-4})(4xy^{-3})$

Divide and simplify.

- 21) a) $\frac{21x^7y^8}{-3x^2y^6}$ b) $\frac{-56x^5y^7}{-7x^3y^4}$
- c) $\frac{7w^5(w-1)^3}{5(w^5)-5}$

Simplify. Write the answer using only positive exponents.

22) a) $\frac{x^{-4}y^2}{z^{-5}}$ b) $\frac{x^3}{x^{-8}}$ c) $\frac{6^{-8}}{6^{-4}}$

23) a) $(a^5)^6$ b) $(9^{-3})^7$ c) $(-2^{-3})^{-5}$

Simplify. Write the answer using positive exponents only.

24) a) $3(x^5y^2)^5$ c) $(6x^{-4})^3(x^2)^{-5}$
 b) $(4x^7y^{-8})^{-2}$ d) $\frac{(3x^2y^4)^6}{9xy^2}$

25) $\left(\frac{2x^3y^{-3}}{x^{-4}y^5}\right)^{-3}$

Graph.

26) $y = x - 4$

27) $y = -3x$

28) $y = |x| - 3$

29) $f(x) = \frac{1}{3}x - 2$

30) $y = -2$

31) $y + 5 = 0$

32) $18x = 72$

33) $2 \cdot f(x) + 2x = 8 + 2x$

Determine if the ordered pair is a solution of the equation.

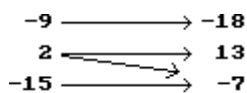
34) $(2, 3); 3x - 5y = 21$

35) $(1, 3); 4w^2 - z = 1$

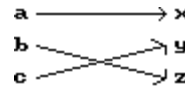
36) $(-1, -9); n + 9 = m^3$

Is the following correspondence a function?

37)



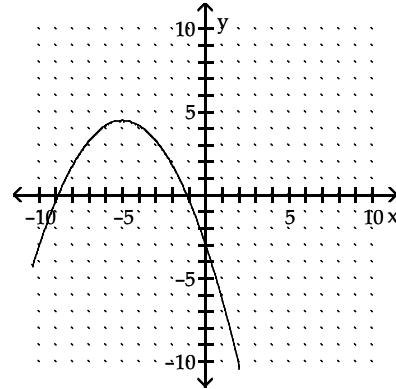
38)



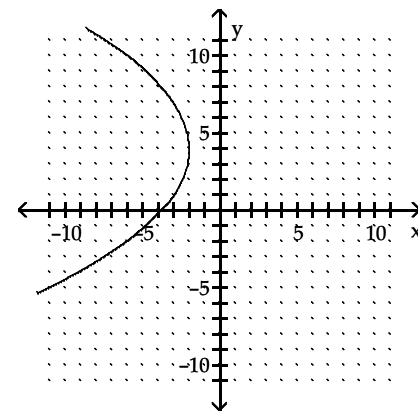
39) Domain: All students attending ACC
 Correspondence: Each student's teachers
 Range: A set of teachers

Determine whether the graph is the graph of a function.

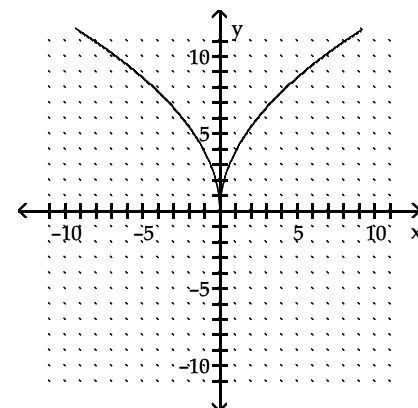
40)



41)

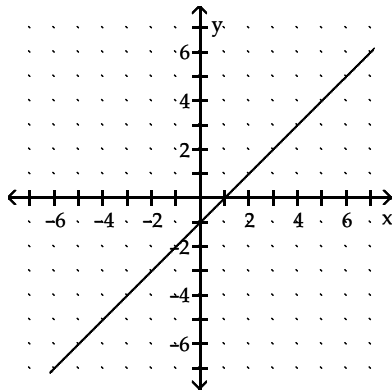


42)



The graph of a function f is provided. Determine the requested function value.

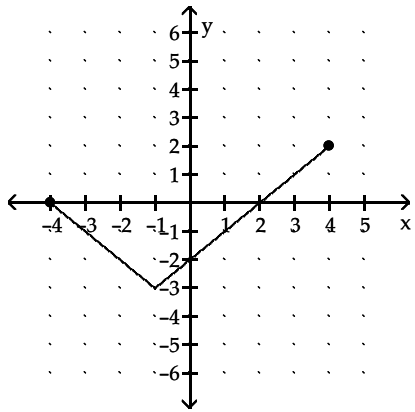
43) $f(1)$, $f(-2)$, $f(4)$



For each function represented in the graph, determine

- (a) the domain;
- (b) the range;
- (c) $f(3)$;
- (d) any x -values for which $f(x) = 2$.

44)



Find the function value.

45) $f(x) = -3x + 31$.

- a) $f(8)$
- b) $f(-4)$
- c) $f(a)$
- d) $f(x + h)$

46) $g(x) = \frac{x-1}{2x+4}$.

- a) $g(1)$
- b) $g(-2)$
- c) $g(\frac{1}{2})$
- d) $g(2a)$

Find the domain of $f(x)$.

- 47) a) $f(x) = \frac{2}{4x-3}$
- b) $f(x) = 3x + 4$
- c) $f(x) = x^2 + 1$
- d) $f(x) = |-7x - 2|$

Solve the problem.

48) The function F described by $F(C) = \frac{9}{5}C + 32$ gives the Fahrenheit temperature corresponding to the Celsius temperature C . Find the Fahrenheit temperature equivalent to $25^\circ C$.

Determine the slope and the y -intercept.

- 49) a) $y = -3x + 5$
- b) $y = x - 2.3$

Find the slope of the line.

- 50) a) $-5y = -4x - 32$
- b) $2x - 5y = 9x + 8$

Find the slope of the line containing the two given points.

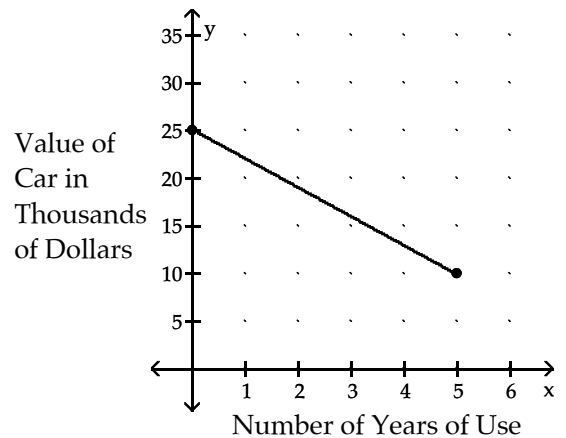
- 51) a) $(3, 9)$ and $(2, 4)$
- b) $(-6, 7)$ and $(-3, -7)$

Find a linear function whose graph has the given slope and y -intercept. (Remember to use function notation!)

- 52) a) Slope $-\frac{4}{5}$, y -intercept 8
- b) Slope $-\frac{5}{6}$, y -intercept $\frac{11}{6}$

Find the rate of change. Remember to use appropriate units.

53)



Solve the problem.

- 54) A deep sea diving bell is being lowered at a constant rate. After 9 minutes, the bell is at a depth of 500 feet. After 30 minutes the bell is at a depth of 1600 feet. What is the average rate of lowering per minute?
- 55) The cost of manufacturing a molded part is related to the quantity produced during a production run. When 100 parts are produced, the cost is \$300. When 300 parts are produced, the cost is \$1100. What is the average cost per part?
- 56) The value, in dollars, of a particular KX37B computer is given by $V(x) = -550x + 4400$, where x is the number of years the computer has been in existence.
- What do the numbers -550 and 4400 signify?
 - When will the value of the computer be \$2475?
 - What is the domain of x ?

Find the y- and x-intercepts for the equation. Then graph the equation.

- 57) $-5x - 10y = 10$
- 58) $7y = -28 + 4x$

Find the slope of the line.

- 59) a) $3x - 5y = 29$
 b) $7 - 8x = 9 + 10x$
 c) $2y - 13 = 5 + x$
 d) $7y - 6x = 3 + 2y - 6x$

Determine whether the equation is linear.

- 60) a) $6x + 5y = -90$
 b) $-26y + \frac{-10}{x} = 0$
 c) $-73f(x) = 73x^2$
 d) $\frac{g(x)}{38} + 18 = -87 + x$

Answer Key

Testname: IAREVIEW1SU08

1) a) $\frac{x}{2} + 9$ or $\frac{1}{2}x + 9$

b) $x - 10$

c) $0.37x$

d) $0.46x + 7$

2) a) 111 b) 70 c) 344

3) a) $-\frac{263}{16}$ b) 478 c) 5770

4) -8

5) $\frac{2}{3}$

6) $\frac{5}{4}$

7) $\frac{1}{2}$

8) 1

9) 60

10) -80.0000

11) a) Identity

b) Conditional

c) Contradiction

12) 28 m by 14 m

13) $120^\circ, 24^\circ, 36^\circ$

14) \$17,362

15) 40 minutes

16) \$2150.00

17) 24 m

18) a) $m = \frac{C}{1 + bx}$

b) $b = \frac{2A}{h}$

c) $C = \frac{5}{9}(F - 32)$

19) a) 4^9 c) x^5

b) $21a^{11}$ d) $x^{10}y^8$

20) a) $\frac{1}{9^{11}}$ b) $\frac{1}{x^9}$ c) $\frac{28}{x^7y^7}$

21) a) $-7x^5y^2$ b) $8x^2y^3$ c) $\frac{7w^{27}}{5}$

22) a) $\frac{y^2z^5}{x^4}$ b) x^{11} c) $\frac{1}{64}$

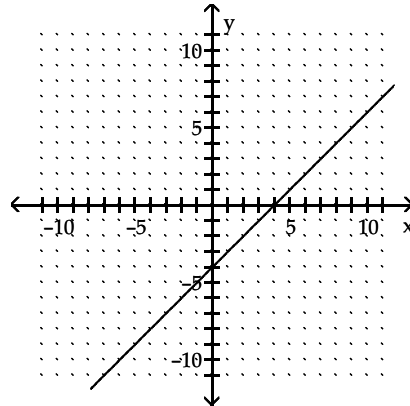
23) a) a^{30} b) $\frac{1}{9^{21}}$ c) -2^{15}

24) a) $3x^{25}y^{10}$ c) $\frac{6^3}{x^{22}}$

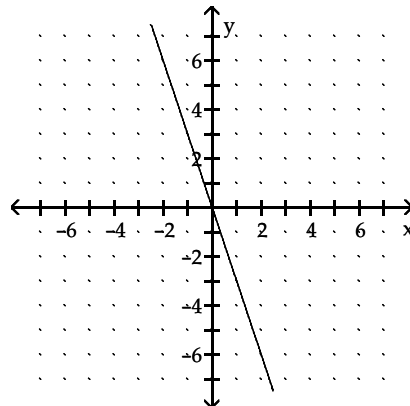
b) $\frac{y^{16}}{16x^{14}}$ d) $81x^{11}y^{22}$

25) $\frac{y^{24}}{8x^{21}}$

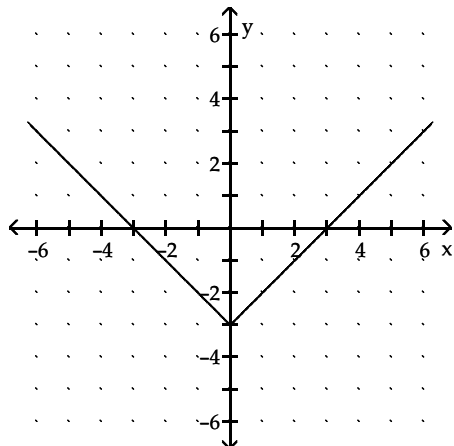
26)



27)



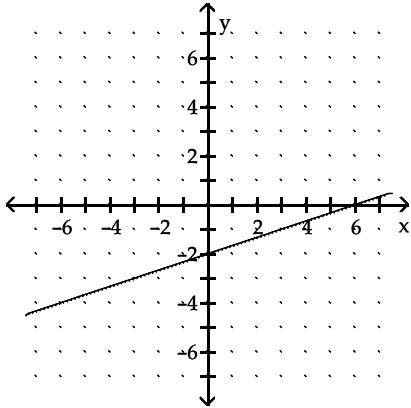
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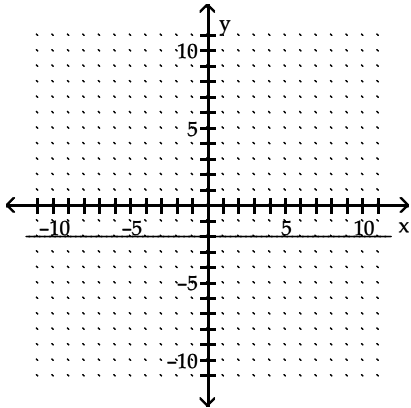
Answer Key

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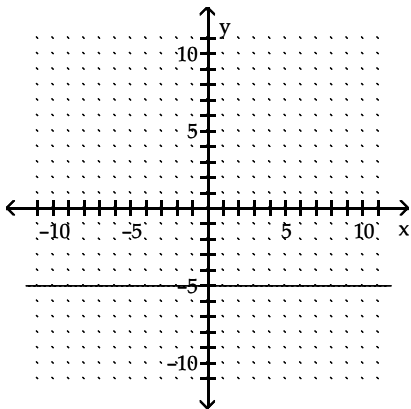
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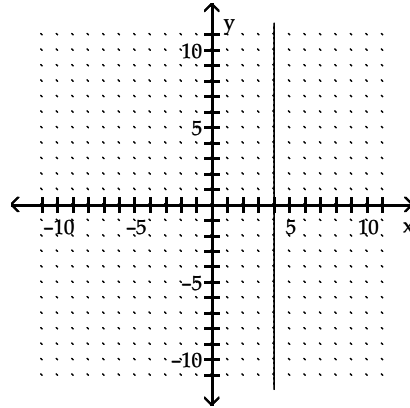
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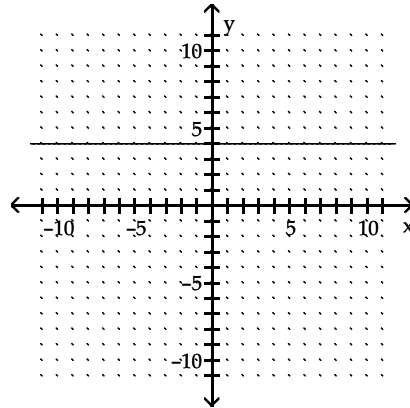
31)



32)



33)



34) No

35) Yes

36) No

37) No

38) Yes

39) No

40) Function

41) Not a function

42) Function

43) 1

44) $\{y \mid -3 \leq y \leq 2\}$

45) a) 7 b) 43

c) $-3a + 31$

d) $-3(x + h) + 31$ or $-3x - 3h + 31$

46) a) 0 b) undefined

c) $-\frac{1}{6}$ d) $\frac{2a-1}{4a+4}$

47) a) $\{x \mid x \text{ is a real number and } x \neq \frac{3}{4}\}$

b) \mathcal{R} the set of all real numbers

c) \mathcal{R} the set of all real numbers

d) \mathcal{R} the set of all real numbers

48) 77° F

Answer Key

Testname: IAREVIEW1SU08

- 49) a) Slope = -3, y-intercept = (0, 5)
b) Slope = 1; y-intercept = (0, -2.3)

50) a) $\frac{4}{5}$ b) $-\frac{7}{5}$

51) a) 5 b) $-\frac{14}{3}$

52) a) $f(x) = -\frac{4}{5}x + 8$

b) $g(x) = -\frac{5}{6}x + \frac{11}{6}$

53) -\$3.00 thousand per year

54) 52.4 ft per minute

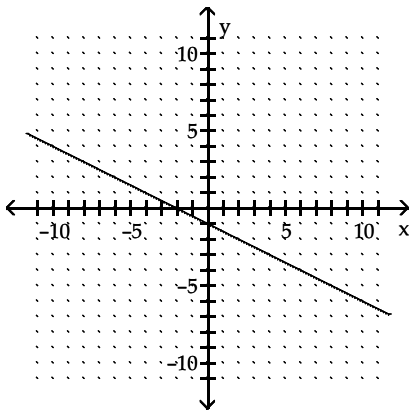
55) \$4.00 per part

56) a) -550 signifies the amount of depreciation in one year, and 4400 signifies the initial cost.

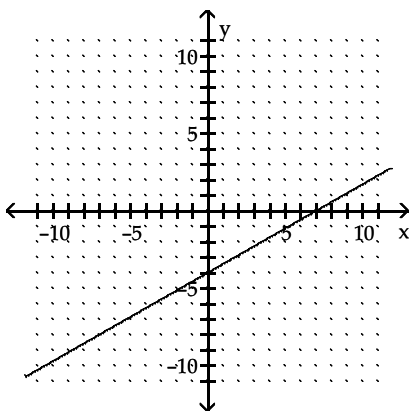
b) 3.5 years

c) $\{x \mid 0 \leq x \leq 8\}$

57) (0, -1); (-2, 0)



58) (0, -4); (7, 0)



59) a) $\frac{3}{5}$ b) Undefined

c) $\frac{1}{2}$ d) 0

- 60) a) Linear
b) Not linear
c) Not linear
d) Linear