

Review

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Evaluate.

1) $4[-7 + 5(7 - 8)]$

2) -4^2

3) 5^{-3}

4) $\frac{1}{5} - \frac{2}{3}$

Perform the indicated operation and simplify if possible.

5) $2x^3 - 6x^2 - 8x + 1 - (6x^3 + 8x^2 - 4x + 7)$

6) $(2x + 5)^2$

7) $(7x + 6)(x^2 + 8x + 2)$

Factor.

8) $x^2 - 2x - 80$

9) $4x^3 - 14x^2 - 8x$

10) $12 - 3x^2$

11) $2a^2 + 2ab - 7a - 7b$

12) $5y^3 - 135$

Simplify. Write the answer with positive exponents only.

13) $\left(\frac{x^5y^{-4}}{xy^{-1}}\right)^2$

Solve the equation or inequality. Write inequality solutions in interval notation.

14) $5(n + 4) = -3(5 - 2n)$

15) $3x - 18 \geq 5x - 6$

16) $x(x - 5) = 24$

Graph.

17) $2x - 4y = 24$

18) $x + 3 = 0$

Find the slope of the line.

19) Through $(5, -5)$ and $(2, 1)$

20) $-6x + y = 3$

Write the equation of the line. Write the equation in standard form.

21) Through $(2, 5)$ and $(4, 11)$

22) Through $(3, -4)$ and parallel to $x = 6$

Solve the system of equations.

23)
$$\begin{cases} 3x - 2y = -17 \\ y = x + 6 \end{cases}$$

24)
$$\begin{cases} 8x - 12y = 13 \\ -2x + 3y = 2 \end{cases}$$

Answer the question about functions.

25) If $h(x) = x^3 + x$, find
a. $h(-1)$ b. $h(0)$ c. $h(3)$

Perform the indicated operations and simplify if possible.

26) $\frac{7x}{x-3} - \frac{21}{x-3}$

27) $\frac{x^2 - 25}{x^2 + 5x} \div \frac{xy + 6x - 5y - 30}{5x - 15}$

28) $\frac{7a}{a^2 - 6a + 8} - \frac{2}{a - 2}$

Simplify. If needed, write answers with positive exponents only.

29) $\sqrt{72}$

$$30) \left(\frac{25}{9}\right)^{-1/2}$$

$$31) \left(\frac{125z^{6/5}}{x^{-3/5}y^{6/7}}\right)^{1/3}$$

Perform the indicated operations and simplify if possible.

$$32) \sqrt{8x^3} - 3\sqrt{32x^3}$$

Solve the equation or inequality. Write inequality solutions in interval notation.

$$33) |8x + 5| + 2 = 10$$

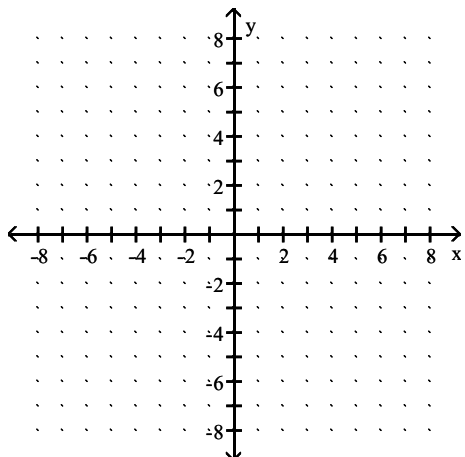
$$34) -6 < 2(x - 4) \leq 2$$

$$35) |3x - 2| \geq 9$$

$$36) 3x^2 + 12x = -5$$

Graph.

$$37) y > -5x$$



Write an equation of the line. Write the equation using function notation.

$$38) \text{Through } (10, -59) \text{ and } (3, -17)$$

$$39) \text{Through } (-3, -13) \text{ and perpendicular to } 3x + 4y = -9$$

Find the distance or midpoint.

$$40) \text{Find the distance between the points } (-4, -6) \text{ and } (6, 6).$$

$$41) \text{Find the midpoint of the line segment whose endpoints are } (9, 3) \text{ and } (-9, -6).$$

Rationalize the denominator and simplify. Assume that all variables represent positive real numbers.

$$42) \sqrt{\frac{121}{x}}$$

Evaluate.

$$43) -2^4$$

$$44) 3^{-2}$$

$$45) 6[-5 + 2(3 - 4)]$$

Perform the indicated operation and simplify if possible.

$$46) (4x^3 + 4x^2 - 7x + 7) - (9x^3 - 9x^2 - 3x + 6)$$

$$47) (3x - 2)^2$$

$$48) (8x + 3)(x^2 + 5x + 2)$$

Factor.

$$49) x^2 - 4x - 45$$

$$50) 10x^3 - 35x^2 - 20x$$

$$51) 144 - 4x^2$$

$$52) 2a^2 + 2ab - 9a - 9b$$

$$53) 3r^3 - 81$$

Simplify.

$$54) \frac{x - y}{y^2 - x^2}$$

Perform the indicated operation and simplify if possible.

$$55) \frac{5a}{a^2 - 8a + 16} - \frac{2}{a - 4}$$

Solve the equation or inequality. Write inequality solutions in interval notation.

56) $5(n + 3) = -3(2 - 2n)$

57) $x(x - 7) = 18$

58) $3x - 36 \geq 9x + 12$

59) $4x^2 + 12x + 6 = 0$

Graph.

60) $3x - 5y = 20$

61) $x - 5 = 0$

62) $y > 3x$

Find the slope of the line.

63) $(-4, -4)$ and $(-7, 8)$

64) $4x + y = 9$

Write the equation of the line. Write the equation in standard form.

65) through $(-1, -2)$ and $(-5, -14)$

66) through $(-2, 4)$ and parallel to $x = -5$

Solve the system of equations.

67)
$$\begin{cases} 4x - 3y = -23 \\ y = x + 6 \end{cases}$$

68)
$$\begin{cases} 6x - 9y = 14 \\ -2x + 3y = 1 \end{cases}$$

Answer the question about functions.

69) If $h(x) = x^3 - x$, find
a. $h(-1)$ b. $h(0)$ c. $h(2)$

Evaluate.

70) $\sqrt{25}$

71) $8^{-2/3}$

72) $\left(\frac{25}{16}\right)^{1/2}$

Simplify.

73) $\sqrt{54}$

74) $\sqrt{64x^{15}}$

Perform the indicated operation and simplify if possible.

75) $\sqrt{27} - 3\sqrt{75}$

76) $\frac{\sqrt{54x^4}}{\sqrt{2x}}$

77) $\sqrt{5}(\sqrt{15} + \sqrt{5})$

Rationalize the denominator.

78) $\sqrt{\frac{3}{5x^2}}$

Simplify the expression by combining like radicals where possible.

79) $4\sqrt{10} + 4\sqrt{10} + 3\sqrt{10} + 11$

80) $\sqrt{3} + \sqrt{147}$

81) $\sqrt{20} + \sqrt{405}$

82) $-3\sqrt{5} - 9\sqrt{45}$

Answer Key

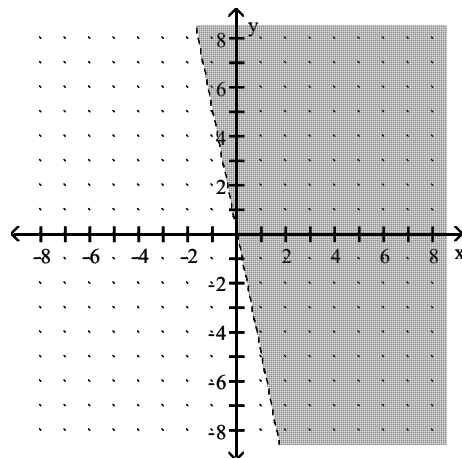
Testname: ALGEBRA 1 - 2ND SEM EXAM REVIEW

- 1) -48
- 2) -16
- 3) $\frac{1}{125}$
- 4) $-\frac{7}{15}$
- 5) $-4x^3 - 14x^2 - 4x - 6$
- 6) $4x^2 + 20x + 25$
- 7) $7x^3 + 62x^2 + 62x + 12$
- 8) $(x - 10)(x + 8)$
- 9) $2x(2x + 1)(x - 4)$
- 10) $3(2 + x)(2 - x)$
- 11) $(2a - 7)(a + b)$
- 12) $5(y - 3)(y^2 + 3y + 9)$
- 13) $\frac{x^8}{y^6}$
- 14) 35
- 15) $(-\infty, -6]$
- 16) -3, 8
- 17)

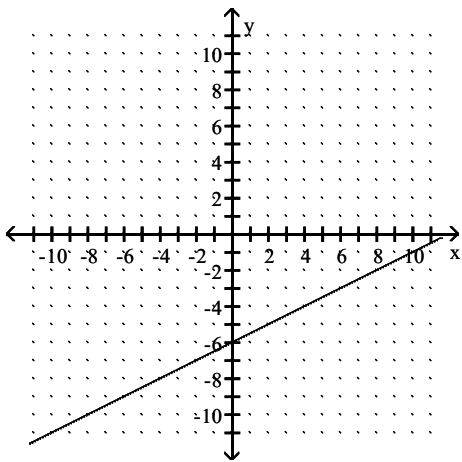
- 19) $m = -2$
- 20) $m = 6$
- 21) $-3x + y = -1$
- 22) $x = 3$
- 23) $(-5, 1)$
- 24) no solution
- 25) a. -2
b. 0
c. 30
- 26) 7
- 27) $\frac{5(x - 3)}{x(y + 6)}$
- 28) $\frac{5a + 8}{(a - 2)(a - 4)}$
- 29) $6\sqrt{2}$
- 30) $\frac{3}{5}$

- 31) $\frac{5z^{2/5}x^{1/5}}{y^{2/7}}$
- 32) $-10x\sqrt{2x}$
- 33) $\frac{3}{8}, -\frac{13}{8}$
- 34) $[1, 5]$
- 35) $\left[-\infty, -\frac{7}{3}\right] \cup \left[\frac{11}{3}, \infty\right)$
- 36) $\frac{-6 \pm \sqrt{21}}{3}$

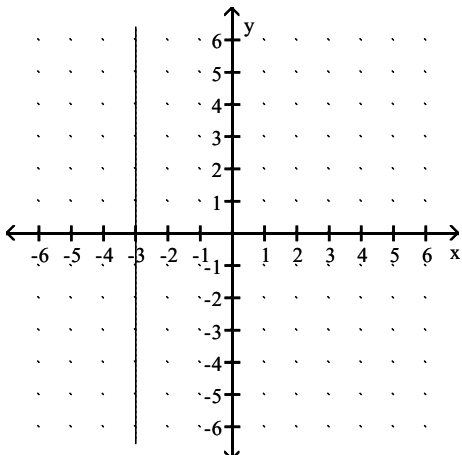
37)



- 38) $f(x) = -6x + 1$
- 39) $f(x) = \frac{4}{3}x - 9$
- 40) $2\sqrt{61}$ units



18)



Answer Key

Testname: ALGEBRA 1 - 2ND SEM EXAM REVIEW

41) $\left(0, -\frac{3}{2}\right)$

42) $\frac{11\sqrt{x}}{x}$

43) -16

44) $\frac{1}{9}$

45) -42

46) $-5x^3 + 13x^2 - 4x + 1$

47) $9x^2 - 12x + 4$

48) $8x^3 + 43x^2 + 31x + 6$

49) $(x - 9)(x + 5)$

50) $5x(2x + 1)(x - 4)$

51) $4(6 + x)(6 - x)$

52) $(2a - 9)(a + b)$

53) $3(r - 3)(r^2 + 3r + 9)$

54) $-\frac{1}{x + y}$

55) $\frac{3a + 8}{(a - 4)(a - 4)}$

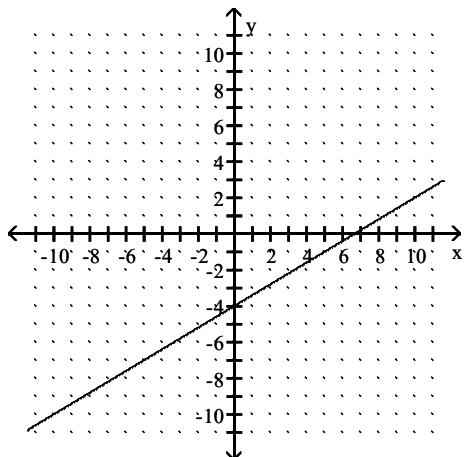
56) 21

57) -2, 9

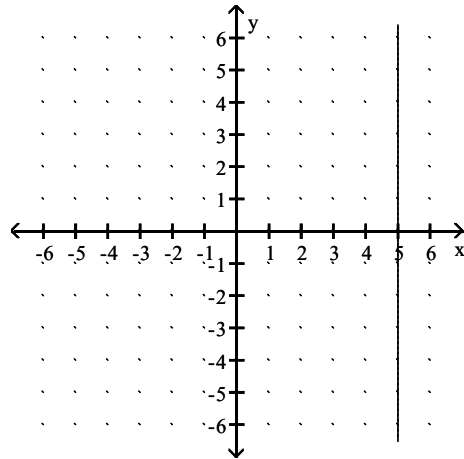
58) $(-\infty, -8)$

59) $\frac{-3 \pm \sqrt{3}}{2}$

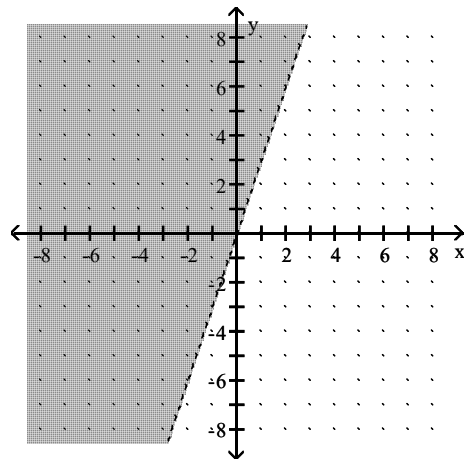
60)



61)



62)



63) $m = -4$

64) $m = -4$

65) $-3x + y = 1$

66) $x = -2$

67) $(-5, 1)$

68) no solution

69) a. 0

b. 0

c. 6

70) 5

71) $\frac{1}{4}$

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

73) $3\sqrt{6}$

74) $8x^7\sqrt{x}$

75) $-12\sqrt{3}$

76) $3x\sqrt{3x}$

77) $5\sqrt{3} + 5$

Answer Key

Testname: ALGEBRA 1 - 2ND SEM EXAM REVIEW

78) $\frac{\sqrt{15}}{5x}$

79) $11\sqrt{10} + 11$

80) $8\sqrt{3}$

81) $11\sqrt{5}$

82) $-30\sqrt{5}$