Math 80 Fall 09 Final Exam Review

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Add or subtract. Simplify the answer.

1) $\frac{4}{15} - \frac{1}{9}$ 1) _____

A) $\frac{7}{135}$ B) $\frac{11}{45}$ C) $\frac{1}{15}$ D) $\frac{7}{45}$

Find the product.

2) (−4)(2)(−2)(−4) 2) _____

A) 64 B) −8 C) 16 D) −64

Evaluate x^2, $-x^2$, and $(-x)^2$ for the following value of x.

3) 4 3) _____

A) $x^2 = 16$; $-x^2 = 16$; $(-x)^2 = -16$ B) $x^2 = 16$; $-x^2 = -16$; $(-x)^2 = 16$

Indicate whether the quotient is 0 or undefined.

4) $\frac{-89}{0}$ 4) _____

A) undefined B) 0

5) $\frac{0}{66}$ 5) _____

A) undefined B) 0

Evaluate the expression for the given value of the variable or variables.

6) 5(x + 6) + 22; x = −13 6) _____

A) 122 B) 13 C) −13 D) −78

Solve the equation.

7) 7r + 3 = 66 7) _____

A) r = 6 B) r = 56 C) r = 60 D) r = 9

8) −2x + 6(−3x − 5) = −42 − 8x 8) _____

A) x = − 1 B) x = 6 C) x = 1 D) $x = \frac{18}{7}$

9) $\frac{2x}{5} = \frac{x}{3} + 5$ 9) _____

A) x = 150 B) x = 75 C) x = −150 D) x = −75

10) $\frac{r}{3}+\frac{6}{3}=\frac{r}{6}+\frac{8}{6}$ 10) _____

A) r = 4 B) r = 3 C) r = −12 D) r = −4

Solve the proportion for the variable by cross–multiplying.

11) $\frac{x}{38}=\frac{5}{19}$ 11) _____

A) $x=\frac{5}{2}$ B) $x=\frac{722}{5}$ C) x = 10 D) x = 20

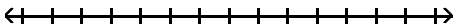
Write a proportion that can be used to solve the problem. Then solve the equation to obtain the answer.

12) It takes Frank 8 minutes to type and spell check 6 pages. Find how many pages he can type and spell check in 5.5 hours. Round to the nearest tenth. 12) _____

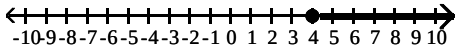
A) 33 pages B) 412.5 pages C) 440 pages D) 247.5 pages

Solve the inequality and graph the solution on a number line.

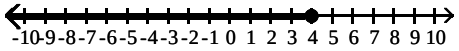
13) −3x ≥ 12 13) _____



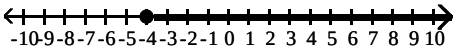
A) x ≥ 4



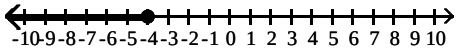
B) x ≤ 4



C) x ≥ −4



D) x ≤ −4



Use the formula to find the value of the variable indicated. Use a calculator to save time and where necessary, round your answer to the nearest hundredth.

14) $P=\frac{A}{1+rt}$; find r when P = 1650, A = 2145, and t = 4. 14) _____

A) r = 0.08 B) r = 0.19 C) r = 99 D) r = 6930

Evaluate the expression for the given value of the variable or variables.

15) $-3x^2+8x-4$; x = −1 15) _____

A) −9 B) −15 C) 7 D) 1

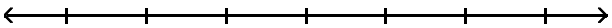
Simplify.

16) −3y + 6 − 1 + 2 + y − 7 16) _____

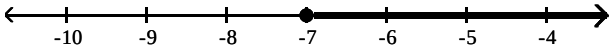
A) −4y B) −4y + 1 C) −2y D) −2y − 1

Solve the inequality and graph the solution on a number line.

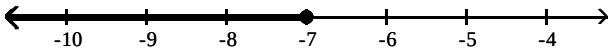
17) $8x - 3 > 7x - 4$ 17) _____



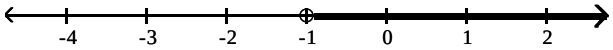
A) $x \geq -7$



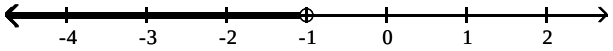
B) $x \leq -7$



C) $x > -1$



D) $x < -1$



Simplify.

18) $-3(8r + 8) + 7(4r + 9)$ 18) _____

A) $5r + 5$ B) $-48r$ C) $4r + 8$ D) $4r + 39$

Evaluate the expression for the given value of the variable or variables.

19) $x(-2x - 4y) + 2y^2$; $x = 4, y = 3$ 19) _____

A) -62 B) -34 C) -30 D) 52

Solve the equation.

20) $\frac{3(y - 2)}{5} = 1 - 3y$ 20) _____

A) $y = \frac{11}{18}$ B) $y = \frac{11}{6}$ C) $y = -\frac{11}{18}$ D) $y = \frac{7}{6}$

Evaluate.

21) $\frac{44 - 4(17 - 13)}{(2 + 6)^2 - 2(37 - 6)}$ 21) _____

A) 14 B) -16 C) -28 D) -11

Express the statement as an algebraic expression.

22) Alexander is t years old. Write an expression that represents Tyson's age if he is 3 times as old as Alexander. 22) _____

A) $3t$ B) $3t + t$ C) $\frac{3}{t}$ D) $3 + t$

Select a variable to represent one quantity and state what that variable represents. Express the second quantity in terms of the variable selected.

23) The average time it takes to get through a check–out line at a large wholesale club is 11 minutes more than 9 times the time it takes to get through a check–out line at a small grocery store, s. 23) _____

A) let s = time at small store, then 11•9 + s = time at large club
B) let s = time at small store, then 9s + 11 = time at large club
C) let s = time at small store, then 11s + 9 = time at large club
D) let s = time at small store, then (11 + 9)s = time at large club

Write an equation to represent the problem.

24) Scot and Elizabeth ate dinner at an upscale bistro. The cost of their meals plus a 21% tip was $ 63.90. 24) _____

A) x + 0.21 = 63.90
B) x + 21x = 63.90
C) x + 0.21x = 63.90
D) x + 2.1x = 63.90

Set up an equation that can be used to solve the problem. Solve the equation and answer the question asked.

25) Ming got a 7% raise in her salary from last year. This year she is earning $67,410. How much did she make last year? 25) _____

A) $471,870 B) $9630 C) $63,000 D) $4410

Solve the problem.

26) The perimeter of a rectangular room is 174 feet. Find the length and width of the room if the length is 9 feet longer than twice the width. 26) _____

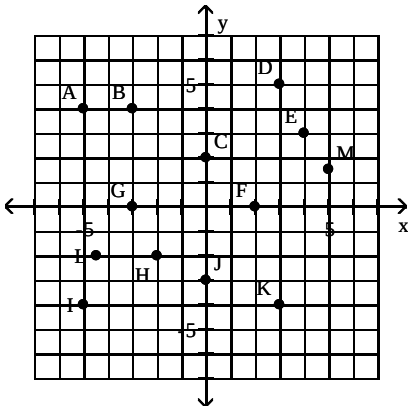
A) w = 52 ft; l = 122 ft
B) w = 39 ft; l = 48 ft
C) w = 26 ft; l = 61 ft
D) w = 31 ft; l = 71 ft

Set up an equation that can be used to solve the problem. Solve the equation and answer the question asked.

27) Jeff starts driving at 45 miles per hour from the same point that Lauren starts driving at 40 miles per hour. They drive in opposite directions, and Lauren has a half–hour head start. How long will they be able to talk on their cell phones that have a 370–mile range? 27) _____

A) 4.4 hours B) 4.1 hours C) 4.3 hours D) 4.6 hours

List the ordered pair corresponding to the point.



28) C 28) _____

A) (2, 0) B) (1, 2) C) (0, 2) D) (2, 1)

Indicate whether the distinct lines, line 1 and line 2 are parallel, perpendicular, or neither.

29) $m_1 = -\frac{3}{8}$, $m_2 = -\frac{8}{3}$ 29) _____

A) parallel B) perpendicular C) neither

30) $m_1 = \frac{4}{5}$, $m_2 = \frac{4}{5}$ 30) _____

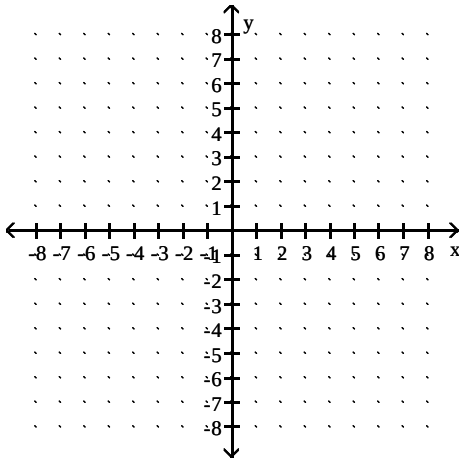
A) parallel B) perpendicular C) neither

31) $m_1 = 7$, $m_2 = \frac{1}{7}$ 31) _____

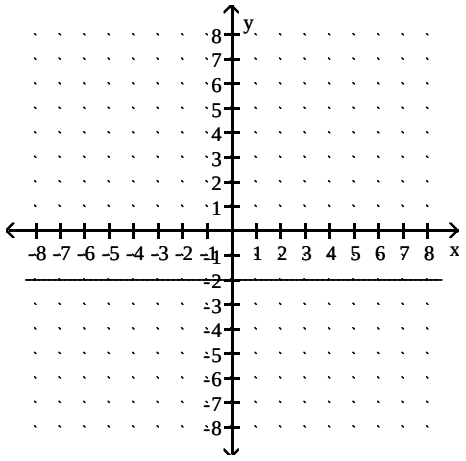
A) parallel B) perpendicular C) neither

Graph the equation.

32) $x = -2$ 32) _____



A)



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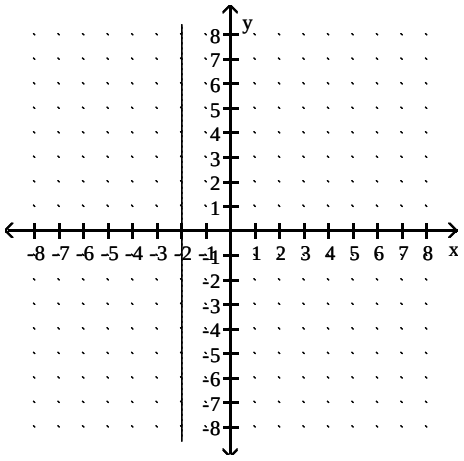
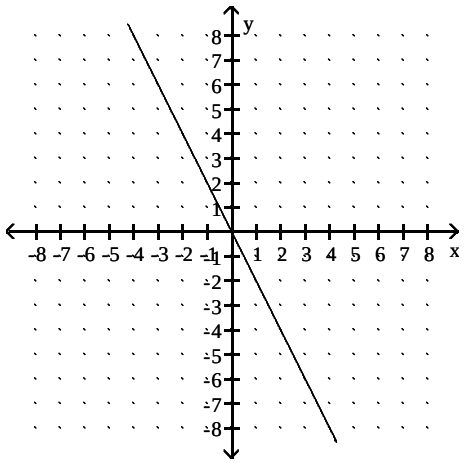
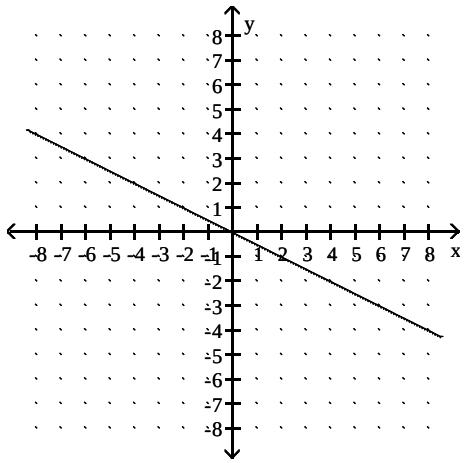


C)

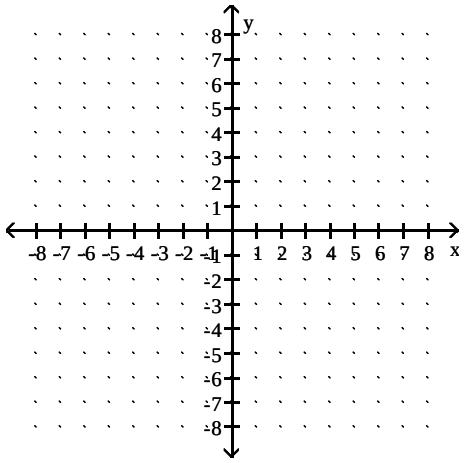


D)

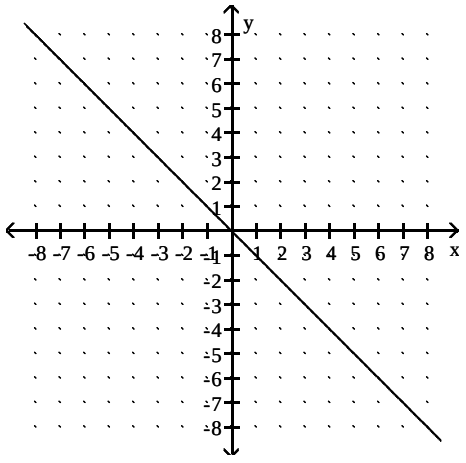


33) y = –1

33) _____



A)



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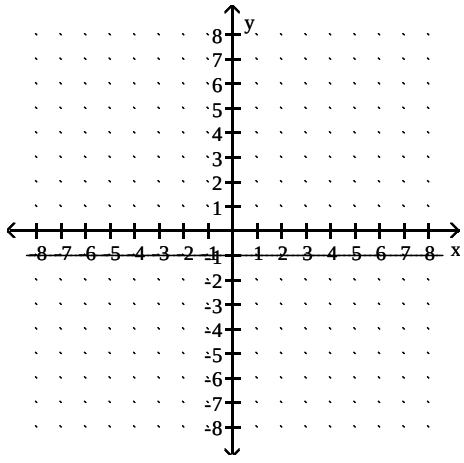
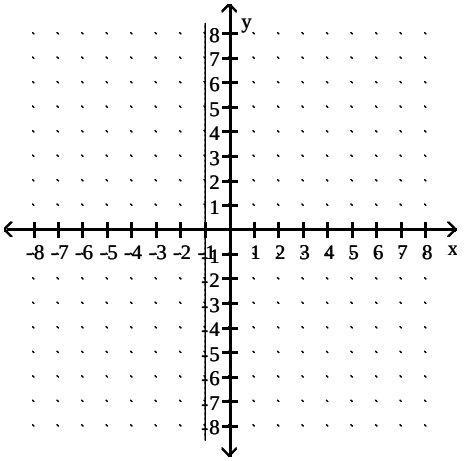


C)



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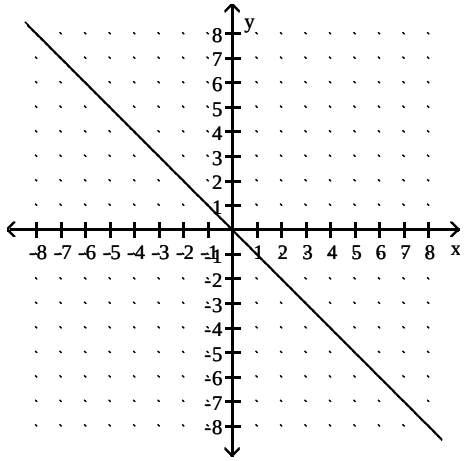
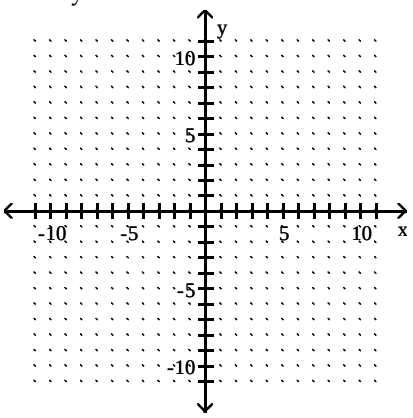
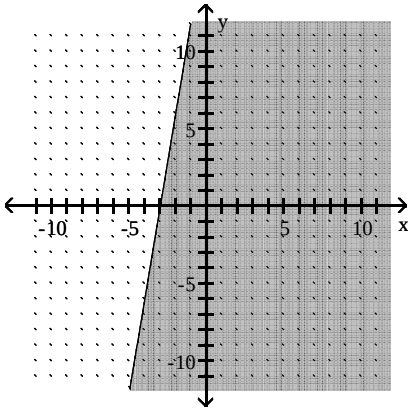


Graph the inequality.

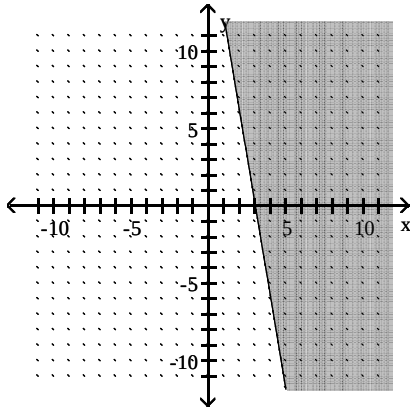
34) $2x + 3y \leq 6$ 34) _____



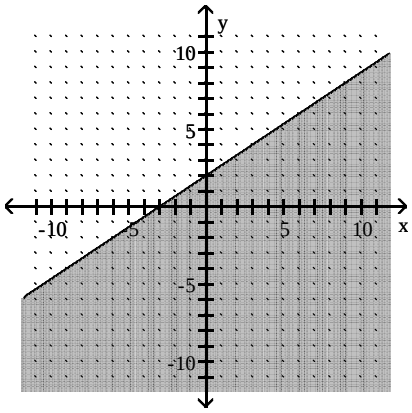
A)



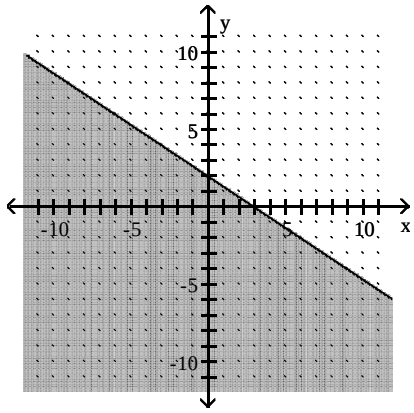
B)



C)

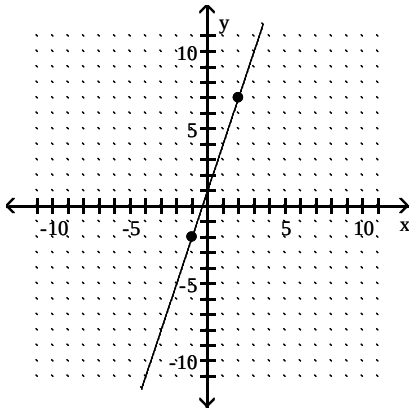


D)



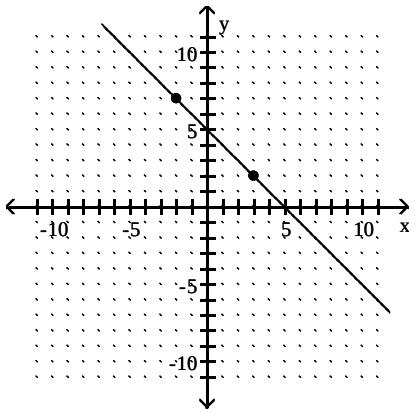
By observing the vertical and horizontal change of the line between the two points indicated, determine the slope of the line.

35) 35) _____



A) m = 3 B) $m = -\frac{1}{3}$ C) $m = \frac{1}{3}$ D) m = –3

36) 36) _____



A) m = 1 B) m = 5 C) m = –1 D) m = –5

Determine the slope and y–intercept of the line represented by the given equation.

37) 9x – 3y = 27 37) _____

A) $m = \frac{1}{3}$; y–intercept is (0, 3) B) m = 9; y–intercept is (0, 27)

C) m = – 3; y–intercept is (0, 9) D) m = 3; y–intercept is (0, –9)

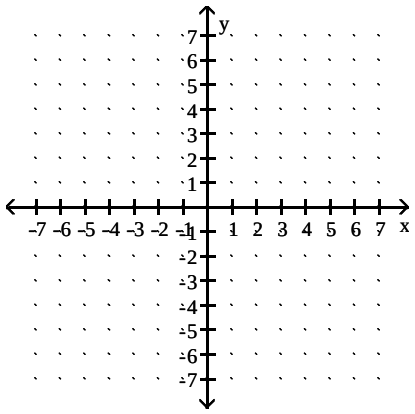
Find the slope of the line through the given points.

38) (5, –7), (–2, 7) 38) _____

A) $m = -\frac{4}{3}$ B) $m = -\frac{1}{2}$ C) $m = -\frac{3}{4}$ D) m = – 2

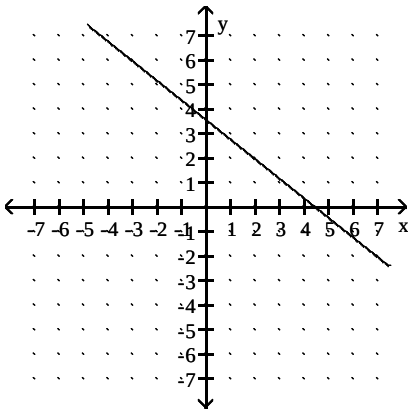
Determine the slope and y–intercept of the line represented by the equation. Graph the line using the slope and y–intercept.

39) $4x + 5y = 18$ 39) _____

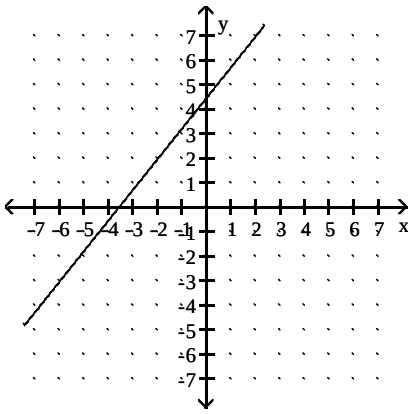


A) $m = -\frac{4}{5}$, y-intercept is $(0, \frac{18}{5})$

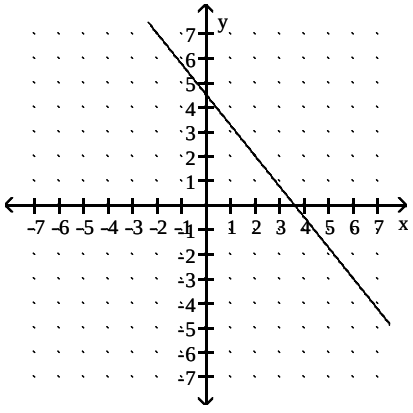
B) $m = \frac{5}{4}$, y-intercept is $(0, \frac{9}{2})$

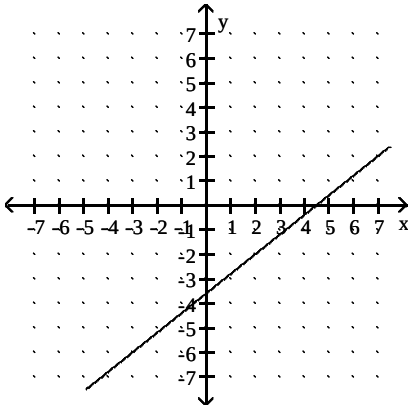


C) $m = \frac{5}{18}$, y-intercept is $(0, \frac{9}{2})$



D) $m = \frac{4}{5}$, y-intercept is $(0, -\frac{18}{5})$





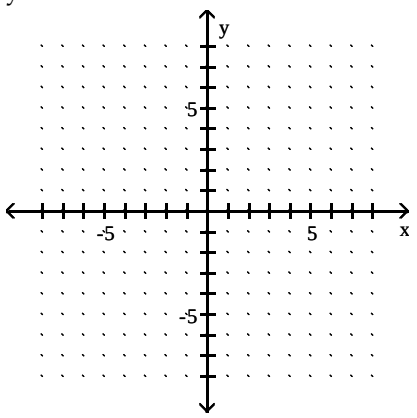
Express the statement as an algebraic expression.

40) The sum of a 85 and a number 40) _____

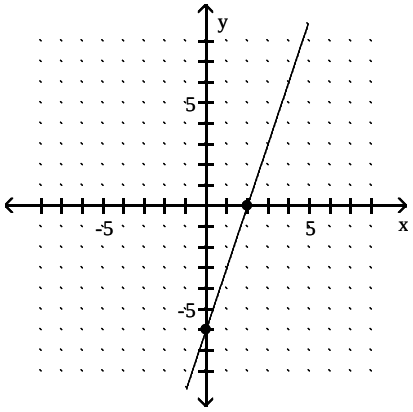
A) 85x B) 85 + x C) 85 D) 85 – x

Graph using the x– and y–intercepts.

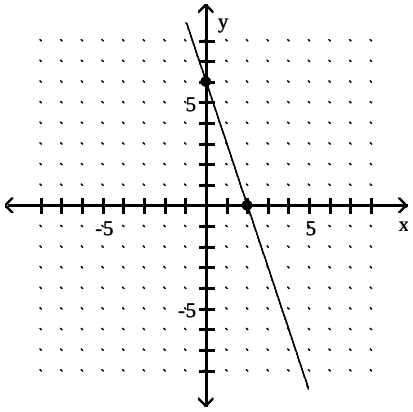
41) $y = 3x - 6$ 41) _____



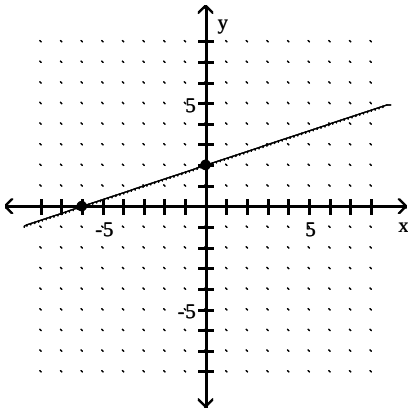
A)



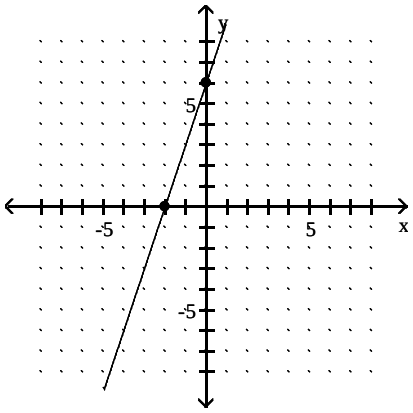
B)



C)



D)



Write the equation of the line, with the given properties, in slope–intercept form.

42) Slope = 3, through (–6, 3) 42) _____

A) $y = 3x - 21$ B) $y - 3 = x + 6$ C) $y = 3x + 21$ D) $y - 3 = 3x + 6$

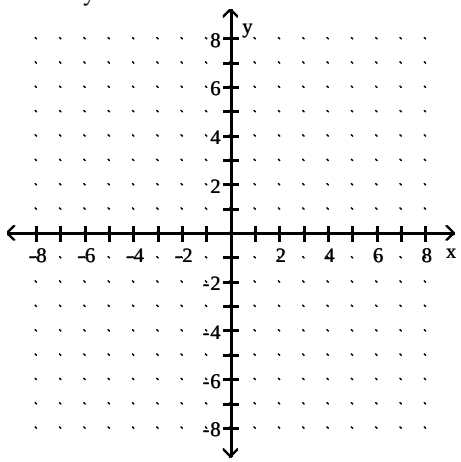
Set up an equation that can be used to solve the problem. Solve the equation and answer the question asked.

43) At a gourmet nut shop, nuts are sold in bulk. Cashews sell for \$1.30 per pound and macadamia nuts sell for \$8.60 per pound. Lee wishes to purchase 5 pounds of mixed nuts by mixing 3.5 pounds of cashews and 1.5 pounds of macadamia nuts. What will be the price per pound of the mixture? 43) _____

A) \$6.41 B) \$17.45 C) \$32.05 D) \$3.49

Determine the solution to the system of linear equations graphically. If the system is dependent or inconsistent, so state.

44) $4x + 5y = 37$ 44) _____
$4x - 2y = 2$



A) (3, 5) B) (5, 3) C) dependent D) inconsistent

Find the solution to the system of equations by substitution.

45) $9x + 7y = 61$ 45) _____
$x + 8y = 14$

A) (5, 2) B) (6, 1) C) (−6, 2) D) no solution

Simplify.

46) $\left(\frac{a^7b^5}{a^8b^4}\right)^0$ 46) _____

A) 0 B) 1 C) $a^{10}b^{10}$ D) $\frac{a^{10}}{b^{10}}$

Solve the system of equations using the addition method.

47) $4x - 6y = 6$ 47) _____
$-8x + 12y = -18$

A) (4, 6) B) (2, 3) C) $\left(\frac{1}{3}, -\frac{1}{2}\right)$ D) no solution

48) $-6x + 6y = 6$ 48) _____
$18y = 18 + 18x$

A) (0, 0) B) (−6, 6)
C) infinite number of solutions D) no solution

49) $3x + 4y = -5$ 49) _____
$-3x - 9y = 15$

A) (−3, −2) B) (3, 2) C) (1, −2) D) (−1, 2)

Express the exercise as a system of linear equations, then find the solution. Use a calculator where appropriate.

50) A barge takes 4 hours to move (at a constant rate) downstream for 32 miles, helped by a current of 2 miles per hour. If the barge's engines are set at the same pace, find the time of its return trip against the current. 50) _____

A) 6 hr B) 4 hr C) 8 hr D) 64 hr

Simplify.

51) $(-6z^2)(3z^3)$ 51) _____

A) $27z^5$ B) $18z^6$ C) $-18z^6$ D) $-18z^5$

52) $\left(-\frac{15x}{25x^3y^2}\right)^3$ 52) _____

A) $-\frac{27}{125x^6y6}$ B) $-\frac{3}{5x^6y^2}$ C) $\frac{27}{125x^6y6}$ D) $\frac{3}{5x^6y^2}$

53) $\left(\frac{5}{y^2}\right)^4$ 53) _____

A) $\frac{5}{y8}$ B) $\frac{625}{y^2}$ C) $\frac{626}{y6}$ D) $\frac{625}{y8}$

Multiply.

54) $(2x - 1)(x + 8)$ 54) _____

A) $x^2 - 8x + 15$ B) $2x^2 + 3x - 8$ C) $x^2 + 15x + 3$ D) $2x^2 + 15x - 8$

55) $-3x^2(8x^2 + 6x + 1)$ 55) _____

A) $-24x^4 - 18x^3 - 3x^2$ B) $-24x^4 - 18x - 3$

C) $5x^4 + 3x - 2$ D) $-24x^4 - 18x^2 - 3$

56) $(y - 5)(y^2 + 5y - 4)$ 56) _____

A) $y^3 - 29y + 20$ B) $y^3 + 21y - 20$

C) $y^3 - 10y^2 - 29y + 20$ D) $y^3 + 10y^2 + 29y - 20$

Divide.

57) $\frac{24x^9 + 120x^4 - 84x^2}{12x^2}$ 57) _____

A) $-24x^7 + 120x^2 + 84$ B) $2x^9 + 10x^4 - 7x^2$

C) $24x^7 + 120x^2 - 84$ D) $2x^7 + 10x^2 - 7$

58) $\frac{5x^3 - 76x - 16}{x - 4}$ 58) _____

A) $5x^2 + 56x + \frac{-240}{x - 4}$ B) $5x^2 - 56x + \frac{-240}{x - 4}$

C) $5x^2 + 20x + 4$ D) $5x^2 - 20x + 4$

59) $\frac{x^2 + 14x + 41}{x + 5}$ 59) _____

A) $x + 10$ B) $\frac{x + 9}{x + 5}$ C) $x + 9 - \frac{4}{x + 5}$ D) $x + 9 + \frac{4}{x + 5}$

Multiply using a special product formula.

60) $(a - 1)(a + 1)$ 60) _____

A) $a^2 - 2a - 1$ B) $a^2 - 1$ C) $a^2 + 2a - 1$ D) $a^2 - 2$

61) $(x - 9)^2$ 61) _____

A) $x^2 + 81$ B) $81x^2 - 18x + 81$ C) $x^2 - 18x + 81$ D) $x + 81$

Simplify.

62) $\left(\frac{12t^3}{6s^4}\right)^3$ 62) _____

A) $\frac{8t^9}{s^{12}}$ B) $\frac{8t^9}{s^4}$ C) $\frac{6t^6}{s^7}$ D) $\frac{2t^9}{s^{12}}$

Subtract.

63) $(3r^2 + 3r - 9) - (-7r^2 - 5)$ 63) _____

A) $10r^2 + 3r - 4$ B) $-4r^2 + 8r - 9$ C) $-4r^2 + 3r - 14$ D) $10r^2 + 8r - 9$

Factor the GCF from each term in the expression.

64) $18m^7 - 6m^5 - 9m^2$ 64) _____

A) $3m^2(6m^5 - 2m^3 - 3)$ B) $3(6m^7 - 2m^5 - 3m^2)$

C) $-3m^2(6m^5 + 2m^3 + 3)$ D) $m^2(18m^5 - 6m^3 - 9)$

Factor by grouping.

65) $12x^2 + 20x - 9x - 15$ 65) _____

A) $(12x + 3)(x - 5)$ B) $(4x - 3)(3x + 5)$ C) $(4x + 3)(3x - 5)$ D) $(12x - 3)(x + 5)$

Factor completely. If the polynomial is prime, so state.

66) $20z^2 - 3z - 9$ 66) _____

A) $(4z + 3)(5z - 3)$ B) $(4z - 3)(5z + 3)$ C) $(20z - 3)(z + 3)$ D) prime

67) $9y^2 - 18y + 8$ 67) _____

A) $(9y + 2)(y + 4)$ B) $(3y + 2)(3y + 4)$ C) $(3y - 2)(3y - 4)$ D) prime

Factor the difference of two squares.

68) $x^4 - 256$ 68) _____

A) $(x^2 - 16)(x^2 - 16)$ B) $(x^2 + 16)(x + 4)(x - 4)$

C) $(x^2 + 16)(x^2 + 16)$ D) prime

Simplify.

69) $\frac{3x^2 - 27}{18 - 6x}$ 69) _____

A) $-2(x + 3)$ B) $\frac{x^2 - 9}{3 - x}$ C) $\frac{x + 3}{2}$ D) $-\frac{x + 3}{2}$

Determine the value or values of the variable where the expression is defined.

70) $\frac{x - 2}{x^2 - 81}$ 70) _____

A) all real numbers except $x = 9$, $x = -9$ B) all real numbers except $x = 81$

C) all real numbers except $x = \frac{2}{81}$ D) all real numbers except $x = 9$

Add or subtract.

71) $\frac{7x - 7}{x + 6} - \frac{2x - 6}{x + 6}$ 71) _____

A) $\frac{5x - 13}{x + 6}$ B) $\frac{5x + 13}{x + 6}$ C) $\frac{5x - 1}{x + 6}$ D) $\frac{5x + 1}{x + 6}$

72) $\frac{11}{2x - 16} + \frac{x}{x^2 - 64}$ 72) _____

A) $\frac{13x + 88}{2(x + 8)(x - 8)}$ B) $\frac{13x}{(x + 8)(x - 8)}$ C) $\frac{x + 11}{2(x + 8)(x - 8)}$ D) $\frac{12x + 88}{(x + 8)(x - 8)}$

Simplify.

73) $\frac{9 + \frac{3}{x}}{\frac{x}{4} + \frac{1}{12}}$ 73) _____

A) 36 B) $\frac{x}{36}$ C) 1 D) $\frac{36}{x}$

Solve the equation and check your solution.

74) $\frac{5}{4x} - \frac{1}{x+1} = \frac{2}{3x^2 + 3x}$ 74) _____

A) $x = -7$ B) $x = -\frac{7}{3}$ C) $x = -\frac{7}{12}$ D) No solution

Solve the problem and answer the question.

75) A painter can finish painting a house in 8 hours. Her assistant takes 10 hours to finish the same job. How long would it take for them to complete the job if they were working together? 75) _____

A) $4\frac{4}{9}$ hr B) 9 hr C) 7 hr D) $\frac{9}{40}$ hr

Simplify.

76) $\sqrt{72x^2}$ 76) _____

A) $6x^2\sqrt{2}$ B) $6\sqrt{2x^2}$ C) $6\sqrt{2}$ D) $6x\sqrt{2}$

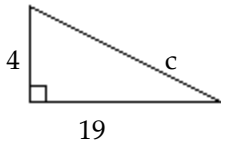
Simplify the expression.

77) $9\sqrt{6} + 8\sqrt{150}$ 77) _____

A) $17\sqrt{6}$ B) $-49\sqrt{6}$ C) $-4\sqrt{6}$ D) $49\sqrt{6}$

Use the Pythagorean Theorem to find the indicated quantity. Round your answer to the nearest hundredth.

78) 78) _____



A) c = 188.5 B) c = 11.5 C) c = 19.42 D) c = 377

Factor completely. If the polynomial is prime, so state.

79) $3x^2 - 11x - 10$ 79) _____

A) $(3x - 2)(x + 5)$ B) $(3x + 2)(x - 5)$ C) $(3x - 5)(x + 2)$ D) prime

Solve.

80) $x(4x + 6) = 4$ 80) _____

A) $\frac{1}{2}, -2$ B) 2, 2 C) $0, -\frac{3}{2}$ D) $0, \frac{3}{2}$

Add or subtract.

81) $\frac{3}{x} + \frac{8}{x - 9}$ 81) _____

A) $\frac{27x - 11}{x(9 - x)}$ B) $\frac{11x - 27}{x(x - 9)}$ C) $\frac{11x - 27}{x(9 - x)}$ D) $\frac{27x - 11}{x(x - 9)}$

Divide.

82) $\frac{p^2 - 2p + pq - 2q}{9p^2 - 9q^2} \div \frac{p - 2}{6p - 6q}$ 82) _____

A) $\frac{6(p^2 - 2p + pq - 2q)}{9(p + q)(p - 2)}$ B) $\frac{2}{3}$

C) 1 D) $\frac{(p - 2)^2}{54(p - q)^2}$

Solve the equation and check your solution.

83) $\frac{x - 4}{6} = \frac{x + 9}{4}$ 83) _____

A) $x = \frac{35}{12}$ B) $x = \frac{2}{3}$ C) $x = 7$ D) $x = -35$

Answer Key
Testname: MATH80FALL09FINALEXAMREVIEW

1) D
2) D
3) B
4) A
5) B
6) C
7) D
8) C
9) B
10) D
11) C
12) D
13) D
14) A
15) B
16) C
17) C
18) D
19) A
20) A
21) A
22) A
23) B
24) C
25) C
26) C
27) B
28) C
29) C
30) A
31) C
32) B
33) B
34) D
35) A
36) C
37) D
38) D
39) A
40) B
41) A
42) C
43) D
44) A
45) B
46) B
47) D
48) C

49) C
50) C
51) D
52) A
53) D
54) D
55) A
56) A
57) D
58) C
59) C
60) B
61) C
62) A
63) A
64) A
65) B
66) B
67) C
68) B
69) D
70) A
71) C
72) A
73) D
74) B
75) A
76) D
77) D
78) C
79) D
80) A
81) B
82) B
83) D