Spring 10 Math 80 FINAL EXAM REVIEW PROBLEMS Name_____

Tests from past semesters are provided as a study preparation tool. As tests are created by different instructors, problems on current tests may differ. Sample tests are a good beginning point in your test preparation but it is recommended that you don't use sample tests as your only study resource.

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

The name of a property is given followed by part of an equation. Complete the equation to the right of the equal sign to illustrate the given property.

1) $9(a + b + 2) =$ 1) _____
distributive property
A) $9a + b + 2$ B) $9a + 9b + 2$ C) $(a + b + 2)9$ D) $9a + 9b + 18$

Add or subtract. Simplify the answer.

2) $\frac{5}{9} - \frac{3}{8}$ 2) _____
A) $\frac{13}{9}$ B) $\frac{13}{72}$ C) $\frac{2}{9}$ D) $\frac{1}{36}$

Evaluate.

3) $-|-16|$ 3) _____
A) 16 B) −16 C) $-\frac{1}{16}$ D) 32

Indicate whether the quotient is 0 or undefined.

4) $\frac{-44}{0}$ 4) _____
A) 0 B) undefined

Find the product.

5) $(-3)(3)(-2)(-3)$ 5) _____
A) −5 B) 18 C) −54 D) 54

Evaluate.

6) -3^2 6) _____
A) −6 B) −9 C) 6 D) 9

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

7) $-3x^2 + 4x - 3; \quad x = -2$ 7) _____
A) −7 B) −23 C) 17 D) 1

Evaluate.

8) $11 + 4^2 - (-10) \cdot 6$ 8) _____
A) 174 B) 87 C) 102 D) −33

Simplify.

9) $-8y + 2 - 6 + 6 + y - 2$ 9) _____
A) −9y B) −7y C) −7y − 1 D) −9y + 1

10) $-6(9r + 8) + 6(10r + 9)$ 10) _____
A) −102r B) 6r + 6 C) 3r + 2 D) 6r + 8

Solve the equation.

11) $\frac{b}{11} - 5 = -2$ 11) _____

A) b = 35 B) b = –35 C) b = 33 D) b = –33

12) $4n - 7 = 13$ 12) _____

A) n = 5 B) n = 20 C) n = 10 D) n = 16

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

13) On an architect's blueprint, 1 inch corresponds to 3 feet. Find the length of a wall represented by a line $7\frac{2}{3}$ inches long on the blueprint. Round to the nearest tenth. 13) _____

A) 23 feet B) 30.0 feet C) 255.6 feet D) 3.9 feet

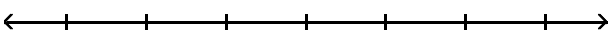
Solve the proportion for the variable by cross–multiplying.

14) $\frac{2}{x} = \frac{0.5}{1}$ 14) _____

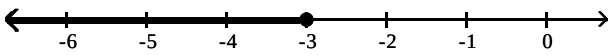
A) x = 2 B) $x = \frac{1}{2}$ C) x = 4 D) x = 1

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

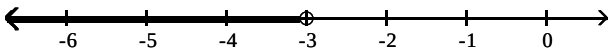
15) $x + 4 < 1$ 15) _____



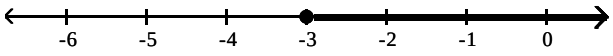
A) $x \le -3$



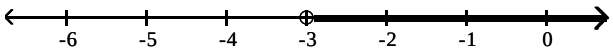
B) $x < -3$



C) $x \ge -3$



D) $x > -3$



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

16) $3x^2 - 5xy - 2y^2$; x = –2, y = –4 16) _____

A) –60 B) 60 C) –10 D) 0

Simplify.

17) –6(3r + 8) + 2(7r + 2) 17) _____

A) –4r – 44 B) –4r + 8 C) –3r + 2 D) –66r

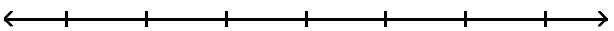
Solve the equation.

18) $\frac{2x}{5} = \frac{x}{3} + 2$ 18) _____

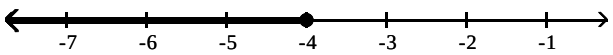
A) x = –60 B) x = 60 C) x = 30 D) x = –30

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

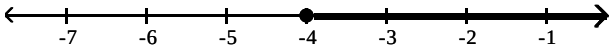
19) –10x + 12 ≥ –11x + 8 19) _____



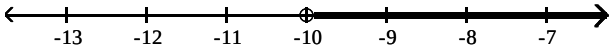
A) x ≤ –4



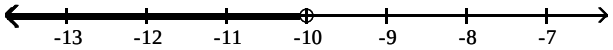
B) x ≥ –4



C) x > –10



D) x < –10



Solve the equation.

20) 7x + 6(–2x – 2) = –14 – 3x 20) _____

A) x = 13 B) $x = \frac{13}{4}$ C) x = 1 D) x = – 1

Express the statement as an algebraic expression.

21) Sam Roberts used to type p words per minute. After taking an advanced typing course, his speed increased by 40 words per minute. Write an expression that represents his new typing speed. 21) _____

A) $\frac{40}{p}$ B) 40p + p C) p + 40 D) 40p

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

22) Last year, Rebecca received a grant of g dollars for school. This year she received $10,000 plus five–ninths of last year's amount. 22) _____

A) let g = old grant amount, then $\frac{5}{9}$10,000 + 10,000g = new grant amount

B) let $\frac{5}{9}$10,000 + g = old grant amount, then g = new grant amount

C) let g = old grant amount, then $\frac{5}{9}$g + 10,000 = new grant amount

D) let $\frac{5}{9}$ + 10,000g = old grant amount, then g = new grant amount

Write an equation to represent the problem.

23) Lauren Wolf purchased a dress at a 10% off sale. She paid $90 for the dress. Let p represent the price of the dress. 23) _____

A) $p - 0.1 = 90$ B) $p + 0.1p = 90$ C) $p - 0.1p = 90$ D) $0.1p - p = 90$

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

24) Because the budget cutbacks, MaryAnn was required to take a 12% pay cut. If she earned $24,000 before the pay cut, find her salary after the pay cut. 24) _____

A) $23,712 B) $23,971.20 C) $2112 D) $21,120

Solve the problem.

25) In a parallelogram, each of the two larger angles is 60° less than twice the smaller angles. Find the measure of each angle. 25) _____

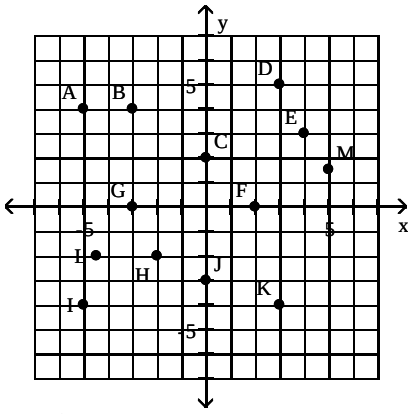
A) smaller angles = 40°; larger angles = 140°
B) smaller angles = 60°; larger angles = 120°
C) smaller angles = 20°; larger angles = 160°
D) smaller angles = 80°; larger angles = 100°

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

26) A motorcycle traveling at 50 miles per hour overtakes a car traveling at 30 miles per hour that had a three–hour head start. How far from the starting point are the two vehicles? 26) _____

A) 225 miles B) 4.5 miles C) 7.5 miles D) 56.3 miles

List the ordered pair corresponding to the point.



27) I 27) _____

A) (–4, 5) B) (–5, 4) C) (–5, –4) D) (–4, –5)

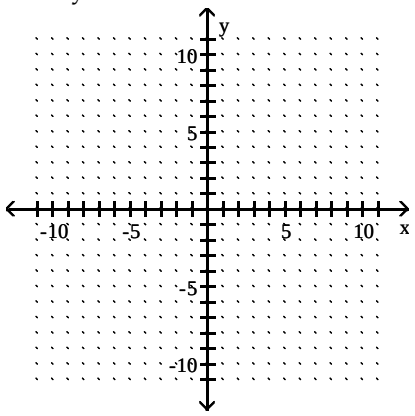
Indicate whether the distinct lines, line 1 and line 2 are parallel, perpendicular, or neither.

28) $m_1 = -\frac{1}{2}$, $m_2 = -2$ 28) _____

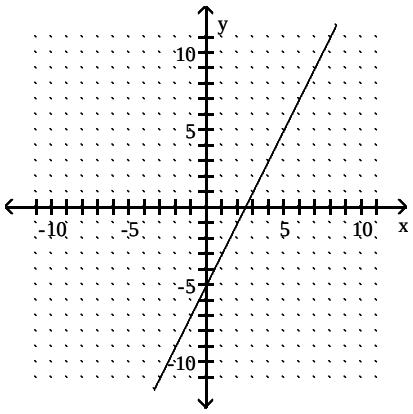
A) parallel B) perpendicular C) neither

Graph by plotting points. Plot at least three points for the graph.

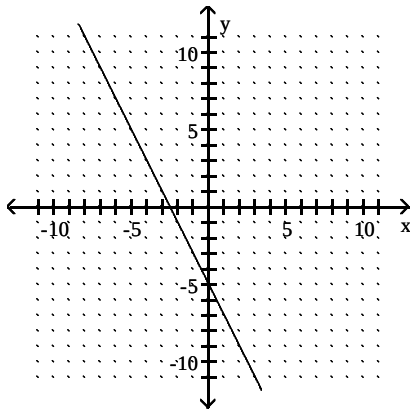
29) $4x - 2y = 10$ 29) _____



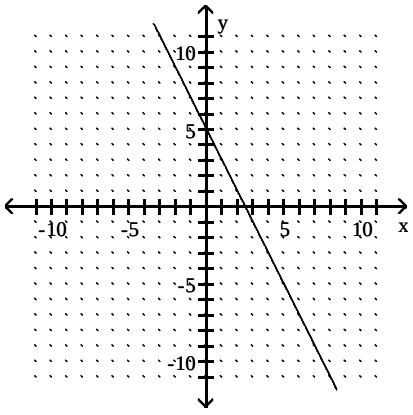
A)



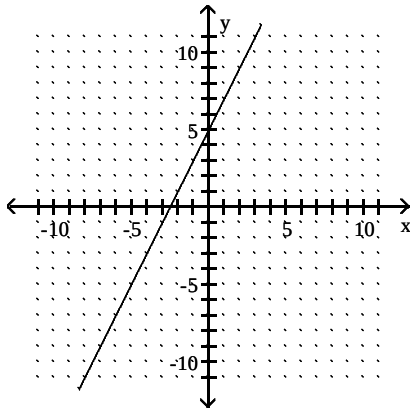
B)



C)

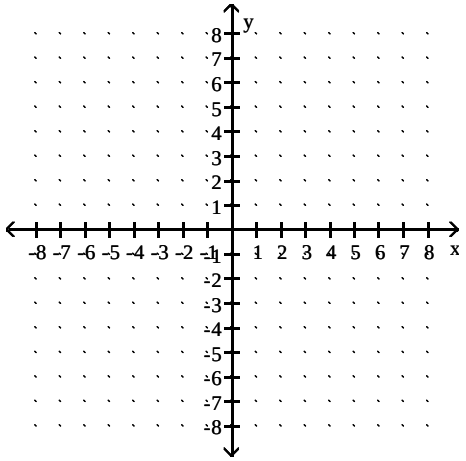


D)

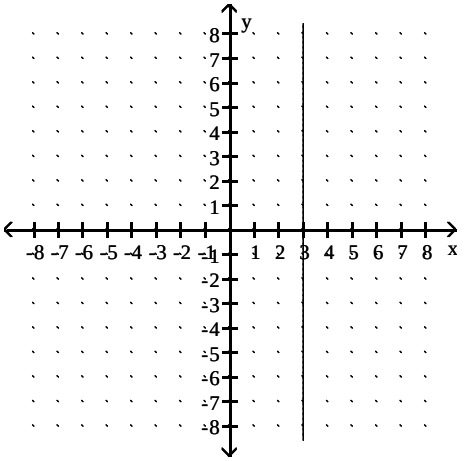


Graph the equation.

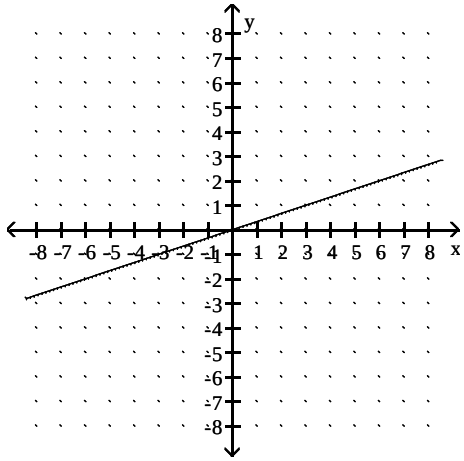
30) $x = 3$ 30) _____



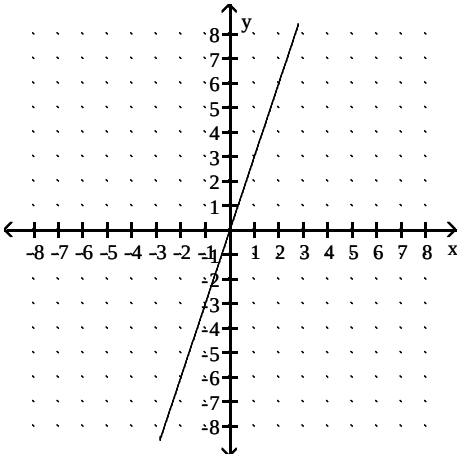
A)



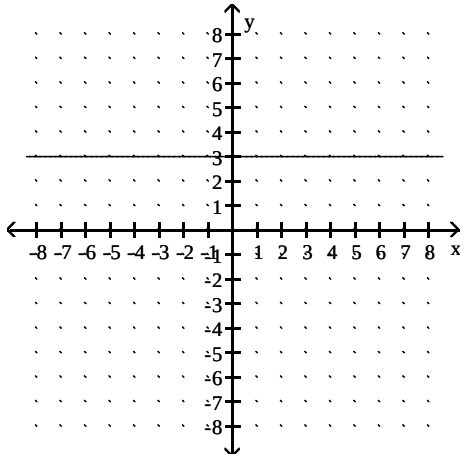
B)



C)



D)



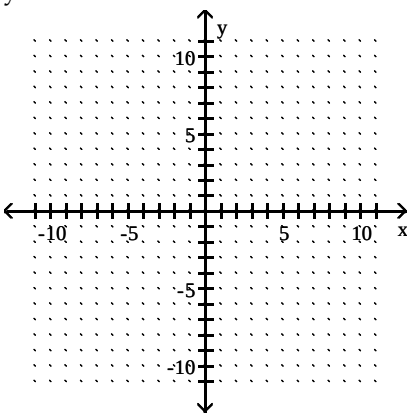
Find the slope of the line through the given points.

31) (2, 9) and (4, 8) 31) _____

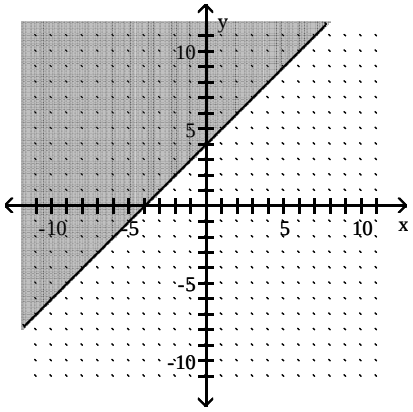
A) $m = -2$ B) $m = \frac{1}{2}$ C) $m = -\frac{1}{2}$ D) $m = \frac{17}{6}$

Graph the inequality.

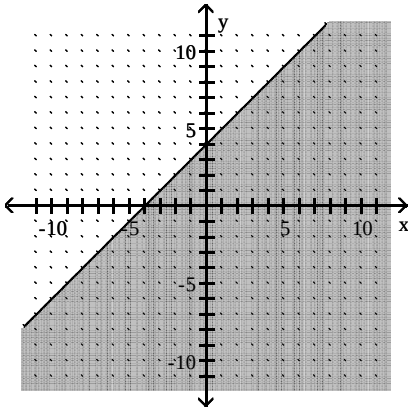
32) $y \leq 4 - x$ 32) _____



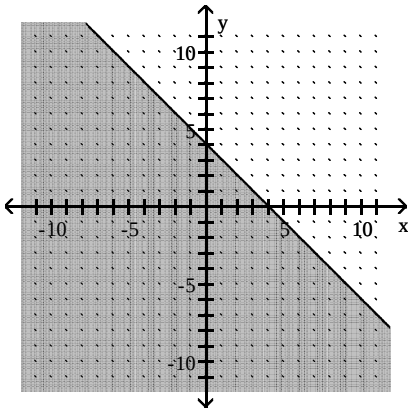
A)



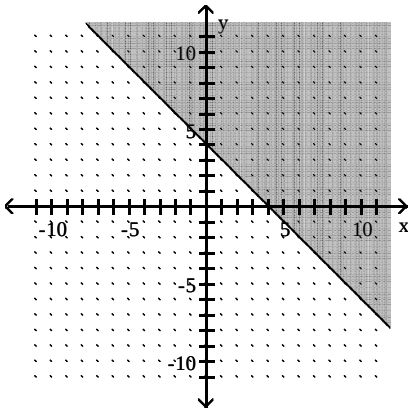
B)



C)

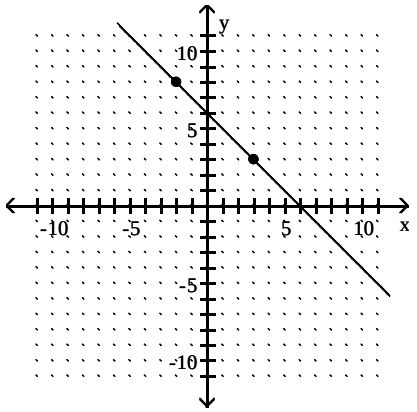


D)



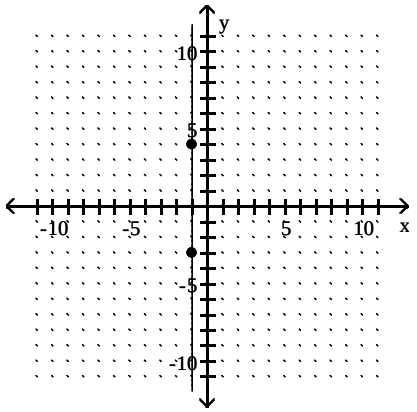
By observing the vertical and horizontal change of the line between the two points indicated, determine the slope of the line.

33) 33) _____



A) m = 1 B) m = 6 C) m = –1 D) m = –6

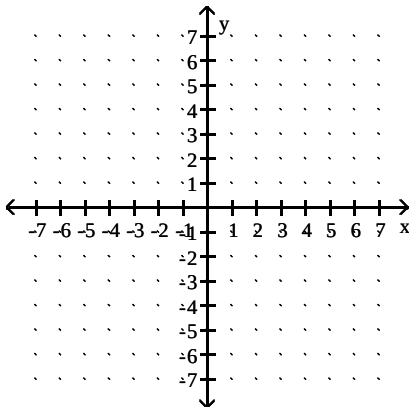
34) 34) _____



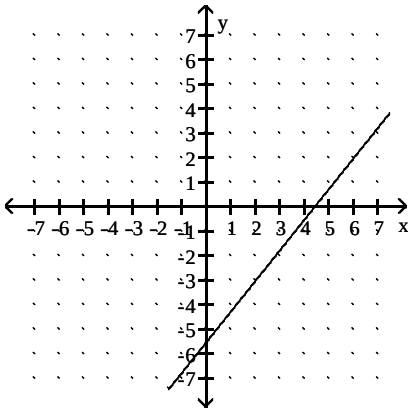
A) m = –1 B) m = 1 C) m = 0 D) undefined

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

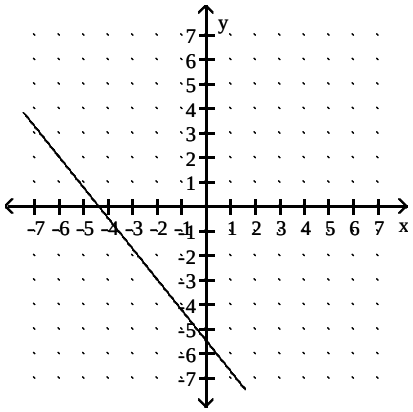
35) 4x = 5y – 22 35) _____



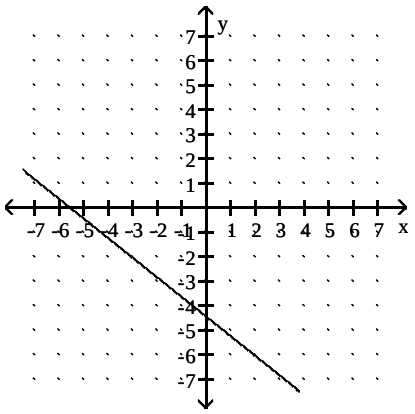
A) m = $\frac{5}{4}$, y–intercept is (0, – $\frac{11}{2}$)



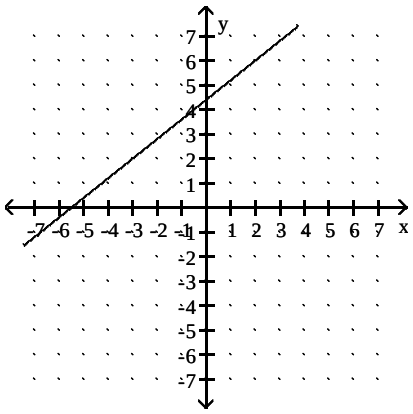
B) m = – $\frac{5}{4}$, y–intercept is (0, – $\frac{11}{2}$)



C) m = – $\frac{4}{5}$, y–intercept is (0, – $\frac{22}{5}$)



D) m = $\frac{4}{5}$, y–intercept is (0, $\frac{22}{5}$)



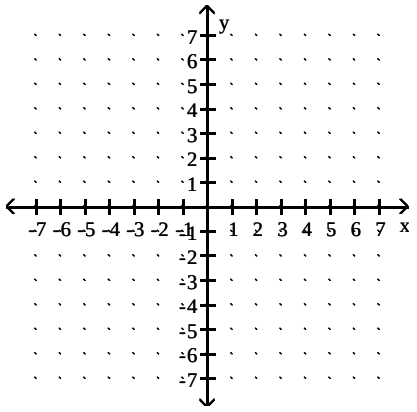
Express the statement as an algebraic expression.

36) Twice the sum of a number and 29 36) _____

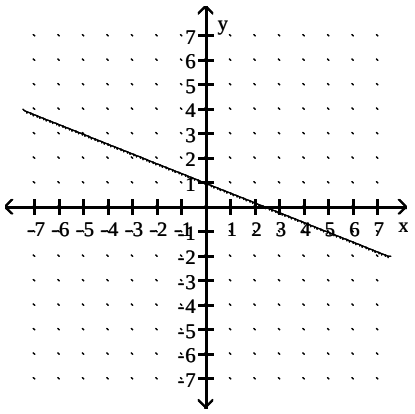
A) 2x + 29 B) 58 + x C) 2(x + 29) D) 29(x + 2)

Graph by plotting points. Plot at least three points for the graph.

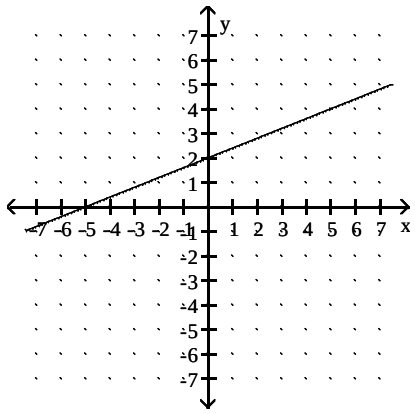
37) y = $\frac{2}{5}$x + 1 37) _____



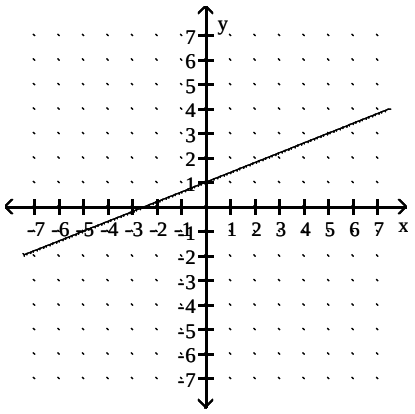
A)



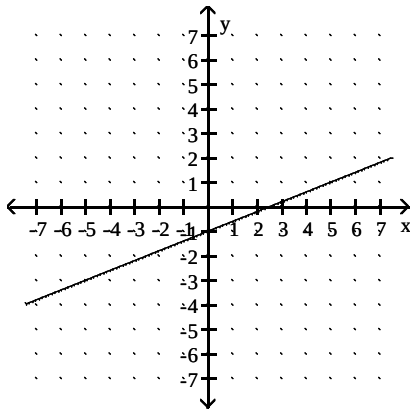
B)



C)



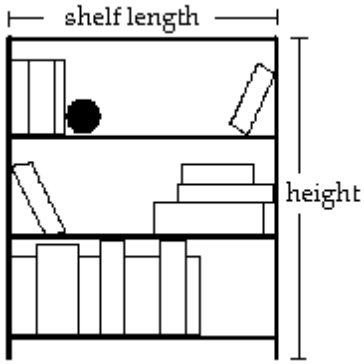
D)



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

Solve the problem.

38) A bookcase is to be constructed with three shelves as shown. The height of the bookcase is 3 feet longer than the length of a shelf, and only 18 feet of lumber is available. What should be the width and height of the bookcase? 38) _____

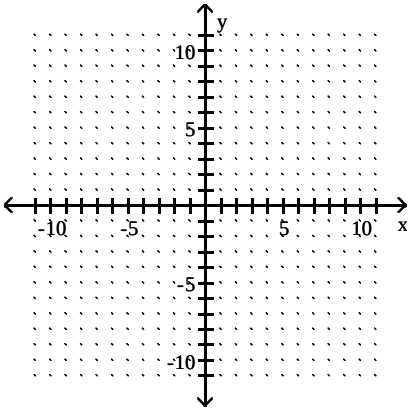


MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

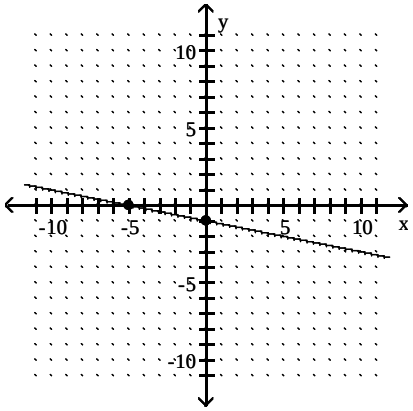
Graph using the x– and y–intercepts.

39) $2x - 10y = 10$ 39) _____

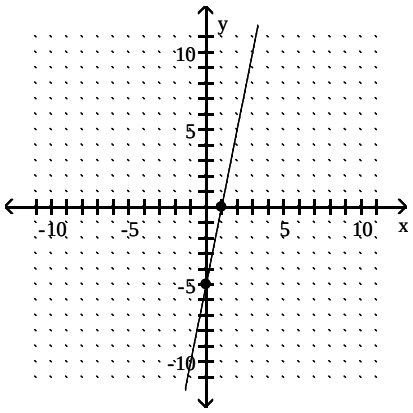
A)



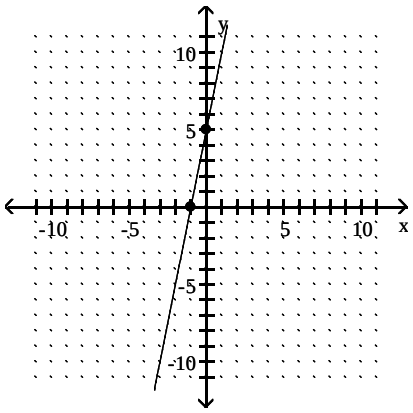
B)



C)



D)



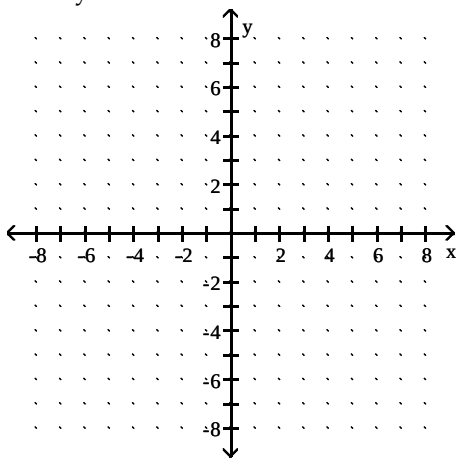
Write the equation of the line, with the given properties, in slope–intercept form.

40) Slope = 3, through (–2, –8) 40) _____

A) $y + 8 = x + 2$ B) $y + 8 = 3(x + 2)$ C) $y = 3x - 2$ D) $y = 3x + 2$

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

41) $4x + y = -16$
$3x + 2y = -7$ 41) _____



A) (−5, −6) B) (−3, −4) C) (5, 4) D) (−5, 4)

Find the solution to the system of equations by substitution.

42) $x + 5y = 5$
$8x - 9y = -9$ 42) _____

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

Solve the system of equations using the addition method.

43) $x - 6y = -28$
$2x - 6y = -20$ 43) _____

A) (8, 6) B) (9, 8) C) (−8, 5) D) no solution

44) $9x - 6y = 5$
$-18x + 12y = -15$ 44) _____

A) (9, 5) B) $\left(\frac{9}{10}, -\frac{3}{5}\right)$ C) (2, 3) D) no solution

Simplify.

45) -12^0 45) _____

A) 0 B) −1 C) −12 D) 1

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

46) Devon purchased tickets to an air show for 9 adults and 2 children. The total cost was $120. The cost of a child's ticket was $6 less than the cost of an adult's ticket. Find the price of an adult's ticket and a child's ticket. 46) _____

A) adult's ticket: $13; child's ticket: $7
B) adult's ticket: $12; child's ticket: $6
C) adult's ticket: $14; child's ticket: $8
D) adult's ticket: $11; child's ticket: $5

Multiply.

47) $(3.5x^4)(3x^6)$ 47) _____

A) $1.05x^{10}$ B) $10.5x^{24}$ C) $10.5x^{10}$ D) $105x^{24}$

Simplify.

48) $\left(\frac{-5xy^6}{z^4}\right)^3$ 48) _____

A) $\frac{125x^3y^{18}}{z^4}$ B) $-\frac{15xy^{18}}{z^{12}}$ C) $-\frac{125x^3y^6}{z^4}$ D) $-\frac{125x^3y^{18}}{z^{12}}$

49) $(3x^{-7}y^9z^{-7})^{-1}$ 49) _____

A) $\frac{x^7z^7}{3y^9}$ B) $\frac{y^{10}}{-3x^8z^8}$ C) $\frac{x^7z^7}{-3y^{-9}}$ D) $\frac{y^{10}}{3x^8z^8}$

Multiply.

50) $4z^2(5z^2 + 3z + 3)$ 50) _____

A) $9z^4 + 7z + 7$ B) $20z^4 + 12z^3 + 12z^2$

C) $20z^4 + 12z + 12$ D) $20z^4 + 12z^2 + 12$

51) $(x + 9y)(5x + 11y)$ 51) _____

A) $x^2 + 56xy + 56y^2$ B) $5x^2 + 56xy + 56y^2$

C) $5x^2 + 56xy + 99y^2$ D) $x^2 + 56xy + 99y^2$

Multiply using a special product formula.

52) $(2x - 2)(2x + 2)$ 52) _____

A) $2x^2 + 8x - 4$ B) $4x^2 - 4$ C) $4x^2 - 8x - 4$ D) $4x^2 + 8x - 4$

Multiply.

53) $(9x - 1)(x^2 - 7x + 1)$ 53) _____

A) $9x^3 - 64x^2 + 16x - 1$ B) $9x^3 - 62x^2 + 2x - 1$

C) $9x^3 - 63x^2 + 9x + 1$ D) $9x^3 + 64x^2 - 16x + 1$

Divide.

54) $\frac{20x^2 + 36x - 11}{4x}$ 54) _____

A) $5x - 2$ B) $20x + 36 - \frac{11}{4x}$ C) $5x + 9 - \frac{11}{4x}$ D) $5x^2 + 9x - \frac{11}{4}$

55) $\frac{x^2 + 4x + 4}{x + 2}$ 55) _____

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

Find the solution to the system of equations by substitution.

56) $x + 7y = -2$ 56) _____

$3x + y = 34$

A) (12, –2) B) (3, 7) C) (7, 12) D) (–2, 3)

Solve the system of equations using the addition method.

57) $2x + 20y = -144$
$11x + 4y = 56$ 57) _____

A) (11, –11) B) (8, –8) C) (–4, 8) D) (–8, 8)

Multiply.

58) $\left(-\frac{1}{5}y^4\right)\left(\frac{1}{3}y^9\right)$ 58) _____

A) $-\frac{1}{15}y^{36}$ B) $\frac{1}{15}y^{13}$ C) $\frac{1}{15}y^{36}$ D) $-\frac{1}{15}y^{13}$

Multiply using a special product formula.

59) $(2x + 9y)^2$ 59) _____

A) $4x^2 + 36xy + 81y^2$ B) $4x^2 + 81y^2$
C) $2x^2 + 81y^2$ D) $2x^2 + 36xy + 81y^2$

Subtract.

60) $(4x^6 + 10x^4 + 6) - (2x^6 - 20x^4 - 18)$ 60) _____

A) $2x^6 + 12x^4 - 12$ B) $2x^6 + 30x^4 + 24$ C) $2x^6 + 30x^4 - 12$ D) $56x^{10}$

Factor the GCF from each term in the expression.

61) $14x^3 - 4x^2 + 10x$ 61) _____

A) $2(7x^3 - 2x^2 + 5x)$ B) $2x(7x^3 - 2x^2 + 5x)$
C) $x(14x^2 - 4x + 10)$ D) $2x(7x^2 - 2x + 5)$

Factor by grouping.

62) $x^3 + 7x^2 + x + 7$ 62) _____

A) $(7x^2 + 7)(x + 1)$ B) $(x^2 + 1)(x + 7)$ C) $(x^2 + 7)(x + 1)$ D) $(x^2 + 1)(7x + 7)$

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

63) $x^2 - x - 54$ 63) _____

A) $(x - 54)(x + 1)$ B) $(x - 6)^2$ C) $(x + 6)(x - 9)$ D) prime

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

64) $20z^2 + 7z - 6$ 64) _____

A) $(20z + 3)(z - 2)$ B) $(4z + 3)(5z - 2)$ C) $(4z - 3)(5z + 2)$ D) prime

Factor the difference of two squares.

65) $4x^2 - 81y^2$ 65) _____

A) $(2x + 9y)^2$ B) $(2x + 9y)(2x - 9y)$
C) $(2x - 9y)^2$ D) prime

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

66) $\frac{3}{x-4}$ 66) _____

A) all real numbers except x = 4
B) all real numbers except x = –4
C) all real numbers except x = 0
D) all real numbers

Simplify.

67) $\frac{2x-12}{x^2-36}$ 67) _____

A) $-\frac{2}{x+6}$ B) $\frac{2}{x+6}$ C) $-\frac{10}{x-36}$ D) $\frac{2}{x-6}$

Add or subtract.

68) $\frac{3x^2-34x}{4x^2-36x}+\frac{7x}{4x^2-36x}$ 68) _____

A) $\frac{x^2-9x}{x^2-9x}$ B) $\frac{3x^2-27x}{4x^2-36x}$ C) $\frac{3}{4}x$ D) $\frac{3}{4}$

Find the least common denominator for the expression.

69) $\frac{5}{12x^2y^5}-\frac{6}{20x^3y^3}$ 69) _____

A) 60xy B) $60x^2y^5$ C) $60x^3y^3$ D) $60x^3y^5$

Simplify.

70) $\frac{\frac{1}{4}-\frac{1}{5}}{\frac{1}{7}-\frac{1}{2}}$ 70) _____

A) $-\frac{7}{10}$ B) $-\frac{10}{7}$ C) $-\frac{50}{7}$ D) $-\frac{7}{50}$

Solve the equation and check your solution.

71) $\frac{x}{2x+2}=\frac{-2x}{4x+4}+\frac{2x-3}{x+1}$ 71) _____

A) x = 3 B) $x=-\frac{12}{5}$ C) x = –3 D) $x=\frac{3}{2}$

Solve the problem and answer the question.

72) One pump can drain a pool in 8 minutes. When a second pump is also used, the pool only takes 5 minutes to drain. How long would it take the second pump to drain the pool if it were the only pump in use? 72) _____

A) $\frac{3}{40}$ min B) $13\frac{1}{3}$ min C) $3\frac{1}{13}$ min D) 37 min

Simplify.

73) $\sqrt{216x^2}$ 73) _____

A) $6\sqrt{6x}$ B) $6x^2\sqrt{6}$ C) $216x$ D) $6x\sqrt{6}$

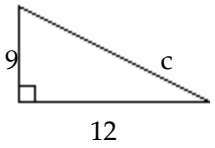
Simplify the expression.

74) $6\sqrt{5} + 5\sqrt{20}$ 74) _____

A) $16\sqrt{5}$ B) $11\sqrt{5}$ C) $-4\sqrt{5}$ D) $-16\sqrt{5}$

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

75) 75) _____



A) c = 14 B) c = 12 C) c = 15 D) c = 10.5

Factor completely.

76) $8y^2 + 36y - 20$ 76) _____

A) $(8y - 4)(y + 5)$ B) $4(2y - 1)(y + 5)$ C) $4(2y + 1)(y - 5)$ D) prime

Solve.

77) $x^2 = x + 6$ 77) _____

A) 2, 3 B) –2, 3 C) –2, –3 D) 1, 6

Divide.

78) $\dfrac{x^2 + 12x + 32}{x^2 + 14x + 48} \div \dfrac{x^2 + 4x}{x^2 + 16x + 60}$ 78) _____

A) $\dfrac{x + 10}{x^2 + 6x}$ B) $\dfrac{x}{x^2 + 14x + 48}$ C) $x + 10$ D) $\dfrac{x + 10}{x}$

Add or subtract.

79) $\dfrac{7}{x + 2} - \dfrac{6}{4x + 8}$ 79) _____

A) $\dfrac{1}{4(x + 2)}$ B) $\dfrac{11}{2(x + 2)}$ C) $\dfrac{11}{2(x + 2)^2}$ D) $\dfrac{-17}{4(x + 2)}$

Simplify.

80) $\sqrt{252}$ 80) _____

A) $7\sqrt{6}$ B) 42 C) 15 D) $6\sqrt{7}$

Answer Key
Testname: M80SPRING10FINALREVIEW

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

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