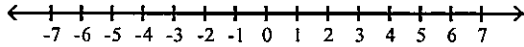


# MATH1100 SEMESTER REVIEW

For the compound inequality, give the solution set in both interval and graph forms.

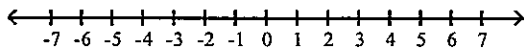
1)  $7x - 4 \geq -4$  and  $7x - 4 \leq 24$

1) \_\_\_\_\_



2)  $9x - 6 < 3x$  or  $-3x \leq -9$

2) \_\_\_\_\_



Solve the equation.

3)  $|4m + 5| = 6$

3) \_\_\_\_\_

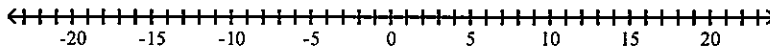
4)  $|x| = -8.8$

4) \_\_\_\_\_

Solve the inequality and graph the solution set.

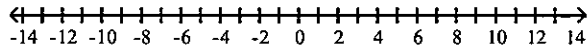
5)  $|g + 2| < 5$

5) \_\_\_\_\_



6)  $|8x - 2| \geq 5$

6) \_\_\_\_\_



Solve the given equation or inequality. If an equation is given, then write the solution set in set notation. If an inequality is given, then write the solution set in interval notation.

7)  $|h - 7| - 2 \leq 5$

7) \_\_\_\_\_

Solve the percent problem.

8) At the end of the day, a storekeeper had \$1060 in the cash register, counting both the sale of goods and the sales tax of 6%. Find the amount that is the tax.

8) \_\_\_\_\_

Solve the equation for the specified variable. Use the distributive property to factor as necessary.

9)  $c = \frac{3t + 4}{t}$  for t

9) \_\_\_\_\_

Solve the formula for the specified variable.

10)  $S = 2\pi rh + 2\pi r^2$  for h

10) \_\_\_\_\_

Solve the equation.

11)  $\frac{3x + 4}{5} + \frac{6}{5} = -\frac{5x}{6}$

11) \_\_\_\_\_

$$12) \frac{2}{x-2} + \frac{10}{x} = \frac{-20}{x^2 - 2x}$$

12) \_\_\_\_\_

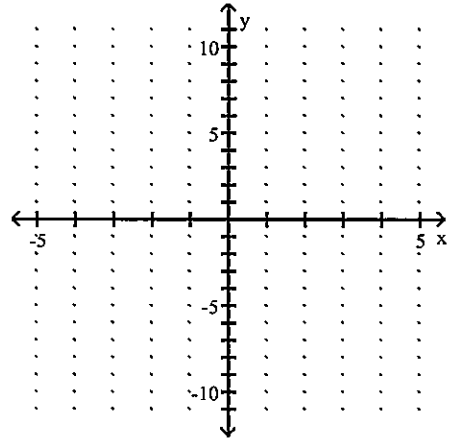
$$13) 1 + \frac{1}{x} = \frac{90}{x^2}$$

13) \_\_\_\_\_

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

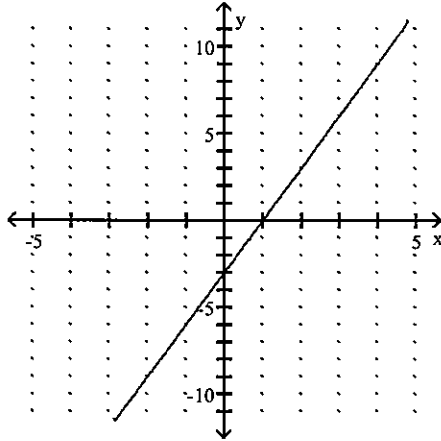
$$14) 6x - 12y = 24$$

14) \_\_\_\_\_



Find the slope of the line.

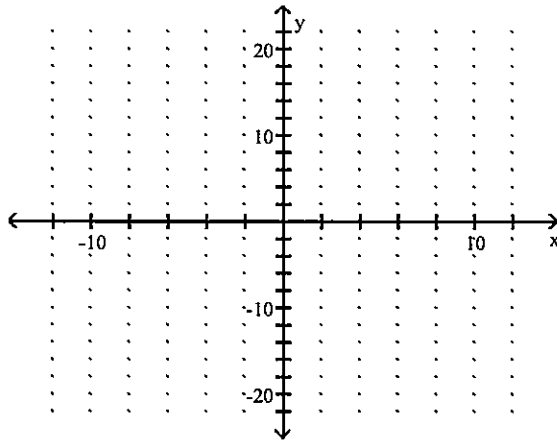
15)



15) \_\_\_\_\_

Find the slope of the line and sketch the graph.

16)  $4x - 5y = -35$



16) \_\_\_\_\_

Find the equation in slope-intercept form of the line satisfying the conditions.

17)  $m = -\frac{4}{3}$ ; y-intercept (0, 8)

17) \_\_\_\_\_

Find an equation of the line that satisfies the conditions. Write the equation in standard form.

18) Through  $(2, 5)$ ;  $m = -\frac{2}{5}$

18) \_\_\_\_\_

Find an equation of the line passing through the two points. Write the equation in standard form.

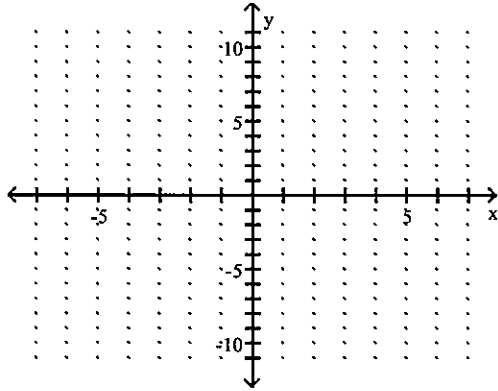
19)  $(7, -3)$  and  $(-6, 8)$

19) \_\_\_\_\_

Graph the linear inequality in two variables.

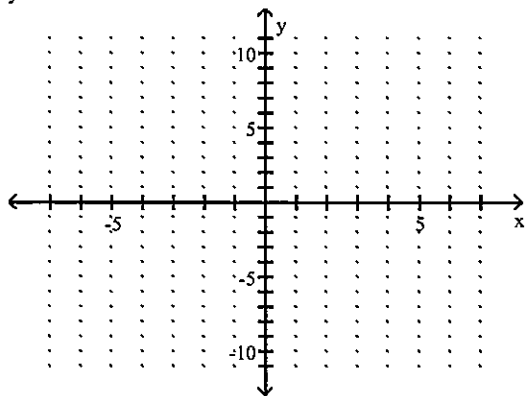
20)  $2x + y \leq -2$

20) \_\_\_\_\_



21)  $y \geq 3x$

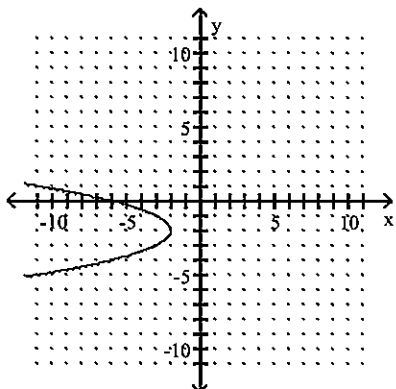
21) \_\_\_\_\_



Decide whether the relation is a function, and give the domain and range.

22)

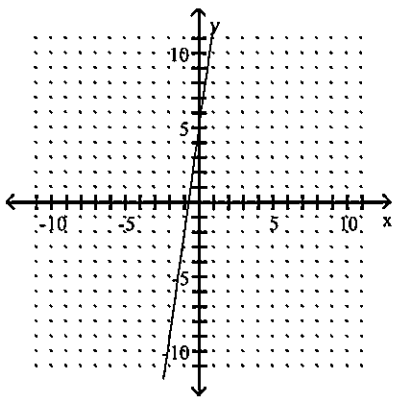
22) \_\_\_\_\_



- A) Function; domain:  $(-\infty, -2]$ ; range:  $(-\infty, \infty)$
- B) Not a function; domain:  $(-\infty, -2]$ ; range:  $(-\infty, \infty)$

23)

23) \_\_\_\_\_



A) Function; domain:  $(-\infty, \infty)$ ; range:  $(-\infty, \infty)$

B) Not a function; domain:  $(-\infty, \infty)$ ; range:  $(-\infty, \infty)$

**Solve the problem.**

24) Find  $f(-3)$  when  $f(x) = 3x^2 + 5x - 2$ .

24) \_\_\_\_\_

**For the given pair of functions, find the requested function.**

25)  $f(x) = x^2 + 3x - 2$ ,  $g(x) = -9x^2 + 9x - 7$ ;  $(f + g)(x)$

25) \_\_\_\_\_

**Find the requested value.**

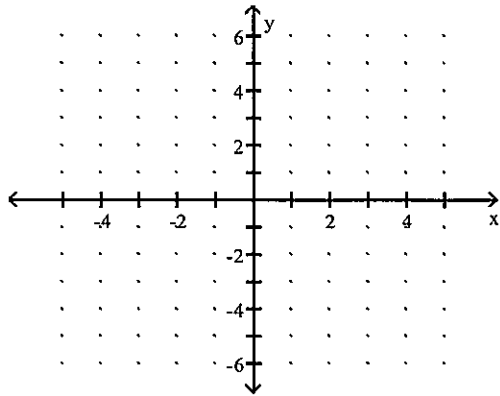
26) If  $f(x) = x^2 + 3x + 7$  and  $g(x) = 9x - 2$ , find  $(fg)(x)$ .

26) \_\_\_\_\_

Graph the linear function. Give the domain and range.

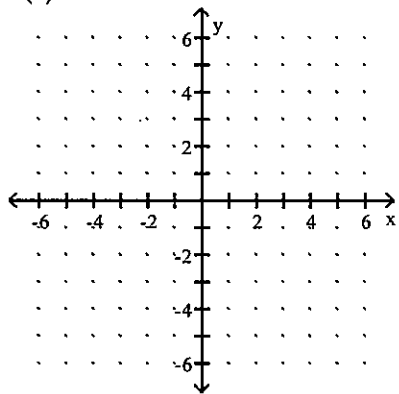
27)  $f(x) = \frac{1}{2}x + 4$

27) \_\_\_\_\_



28)  $h(x) = -3$

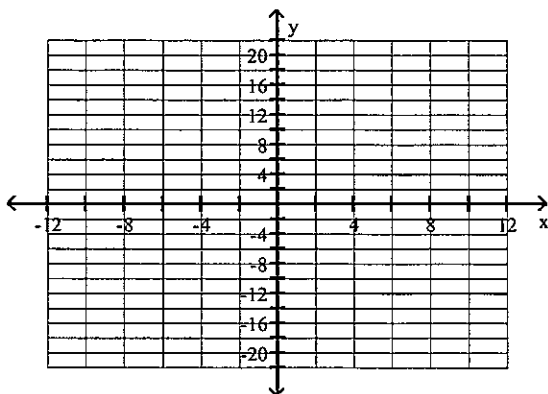
28) \_\_\_\_\_



Solve the system by graphing.

$$\begin{aligned} 29) \quad &x - y = 6 \\ &x + y = 14 \end{aligned}$$

29) \_\_\_\_\_



Solve the system by substitution.

$$\begin{aligned} 30) \quad &5x - 2y = -1 \\ &x + 4y = 35 \end{aligned}$$

30) \_\_\_\_\_

Solve the system by elimination.

$$\begin{aligned} 31) \quad &x - 5y = -7 \\ &-7x - 4y = 49 \end{aligned}$$

31) \_\_\_\_\_

Solve the problem.

32) How many liters (L) of a 30% alcohol solution must be mixed with 50 L of a 80% solution to get a 50% solution?

32) \_\_\_\_\_

33) Ellen wishes to mix candy worth \$1.88 per pound with candy worth \$3.09 per pound to form 30 pounds of a mixture worth \$2.65 per pound. How many pounds of the more expensive candy should she use? 33) \_\_\_\_\_

34) From a point on a river, two boats are driven in opposite directions, one at 6 miles per hour and the other at 5 miles per hour. In how many hours will they be 33 miles apart? 34) \_\_\_\_\_

**Factor out the greatest common factor. Simplify the factors, if possible.**

35)  $24x^9y^7 - 36x^4y^5 + 36x^6y^3$  35) \_\_\_\_\_

**Factor the trinomial completely.**

36)  $6z^2 - 5z - 6$  36) \_\_\_\_\_

37)  $10x^2 - 35x - 20$  37) \_\_\_\_\_

**Factor the polynomial completely.**

38)  $121k^2 - 169m^2$  38) \_\_\_\_\_

**Factor the polynomial.**

39)  $x^2 + 8xy + 16y^2$  39) \_\_\_\_\_

Factor the polynomial completely.

40)  $1000p^3 - 1$

40) \_\_\_\_\_

41)  $t^3 + 216$

41) \_\_\_\_\_

Find all solutions by factoring.

42)  $x^2 + 6x - 27 = 0$

42) \_\_\_\_\_

43)  $2k^2 = 18k - 36$

43) \_\_\_\_\_

44)  $15m^2 - 14m = 0$

44) \_\_\_\_\_

Express the rational expression in lowest terms.

45)  $\frac{y^2 + 13y + 42}{y^2 + 15y + 54}$

45) \_\_\_\_\_

Perform the indicated operation and express in lowest terms.

46)  $\frac{k^2 + 10k + 16}{k^2 + 13k + 40} \cdot \frac{k^2 + 5k}{k^2 - 2k - 8}$

46) \_\_\_\_\_

$$47) \frac{7p-7}{p} \div \frac{8p-8}{2p^2}$$

47) \_\_\_\_\_

Find the least common denominator (LCD).

$$48) \frac{4}{3a+27} + \frac{6}{a^2+9a}$$

48) \_\_\_\_\_

Add or subtract as indicated. Write the answer in lowest terms.

$$49) \frac{4}{r} + \frac{9}{r-7}$$

49) \_\_\_\_\_

Simplify the complex fraction.

$$50) \frac{\frac{9}{y}}{\frac{6}{y-7}}$$

50) \_\_\_\_\_

$$51) \frac{4 + \frac{2}{x}}{\frac{x}{3} + \frac{1}{6}}$$

51) \_\_\_\_\_

**Simplify. Assume that all variables represent positive real numbers.**

52)  $6\sqrt{48x^2} - 3\sqrt{27x^2} - \sqrt{3x^2}$

52) \_\_\_\_\_

**Multiply, then simplify the product. Assume that all variables represent positive real numbers.**

53)  $(5 - 3\sqrt{5})^2$

53) \_\_\_\_\_

54)  $(\sqrt{3x} - 4)(\sqrt{5x} - 3)$

54) \_\_\_\_\_

**Solve the equation.**

55)  $\sqrt{8x - 7} - 10 = 0$

55) \_\_\_\_\_

56)  $4\sqrt{x} = \sqrt{9x + 9}$

56) \_\_\_\_\_

**Write the number as a product of a real number and i. Simplify the radical expression.**

57)  $-\sqrt{-216}$

57) \_\_\_\_\_

**Use the square root property to solve the equation.**

58)  $(x + 20)^2 = 64$

58) \_\_\_\_\_

Find the term that should be added to the expression to form a perfect square trinomial. Write the resulting perfect square trinomial in factored form.

59)  $x^2 - 18x +$

59) \_\_\_\_\_

Use the quadratic formula to solve the equation. (All solutions are real numbers.)

60)  $x^2 = 5 - 8x$

60) \_\_\_\_\_

Use the quadratic formula to solve the equation.

61)  $x^2 + x + 6 = 0$

61) \_\_\_\_\_

Use the quadratic formula to solve the equation. (All solutions are real numbers.)

62)  $\frac{z^2}{3} = \frac{z}{2} + \frac{5}{6}$

62) \_\_\_\_\_