

Name \_\_\_\_\_

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question. If the answer is not listed mark E, for None of the above.

Tell which set or sets the number belongs to: natural numbers, whole numbers, integers, rational numbers, irrational numbers, and real numbers.

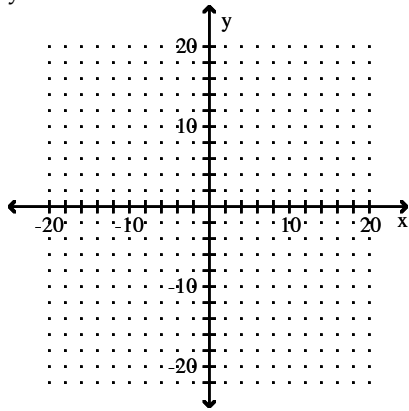
- 1)  $-\sqrt{23}$                       A) integer, real                      B) rational, real                      C) whole, real                      D) irrational, real                      1) \_\_\_\_\_

Determine the vertex of the graph of the parabola.

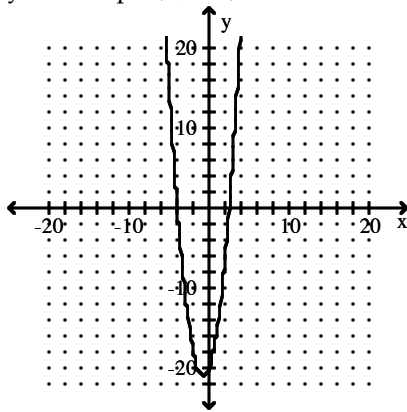
- 2)  $y = -3x^2 - 30x - 76$                       A) (-1, 5)                      B) (5, -1)                      C) (-1, -5)                      D) (-5, -1)                      2) \_\_\_\_\_

Sketch the graph of the equation. Identify the vertex and the intercepts.

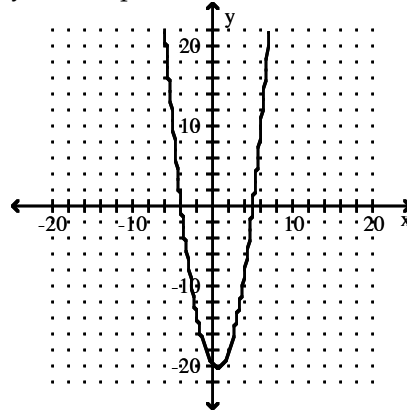
- 3)  $y = 3x + 2x^2 - 20$                       3) \_\_\_\_\_



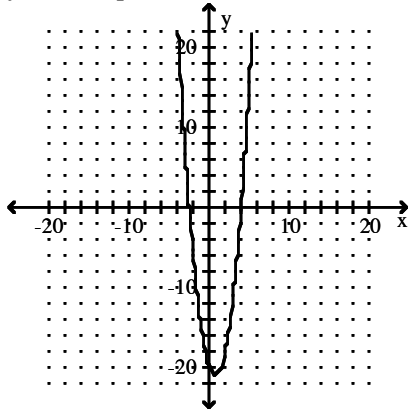
- A) vertex:  $\left(-\frac{3}{4}, -\frac{169}{8}\right)$ ;  
 x-intercepts:  $(-4, 0)$  and  $\left(\frac{5}{2}, 0\right)$ ;  
 y-intercept:  $(0, -20)$



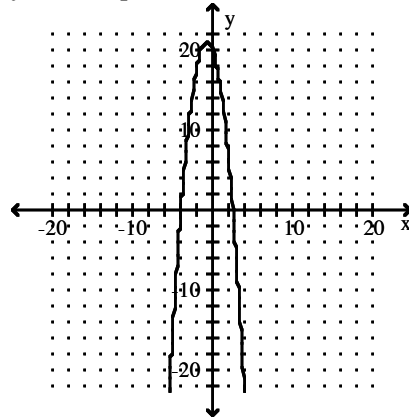
- B) vertex:  $\left(\frac{1}{2}, -\frac{81}{4}\right)$ ;  
 x-intercepts:  $(-4, 0)$  and  $(5, 0)$ ;  
 y-intercept:  $(0, -20)$



C) vertex:  $\left(\frac{3}{4}, -\frac{169}{8}\right)$ ;  
 x-intercepts:  $(4, 0)$  and  $\left(-\frac{5}{2}, 0\right)$ ;  
 y-intercept:  $(0, -20)$



D) vertex:  $\left(-\frac{3}{4}, \frac{169}{8}\right)$ ;  
 x-intercepts:  $(-4, 0)$  and  $\left(\frac{5}{2}, 0\right)$ ;  
 y-intercept:  $(0, 20)$



Decide whether the given number is a solution of the given equation.

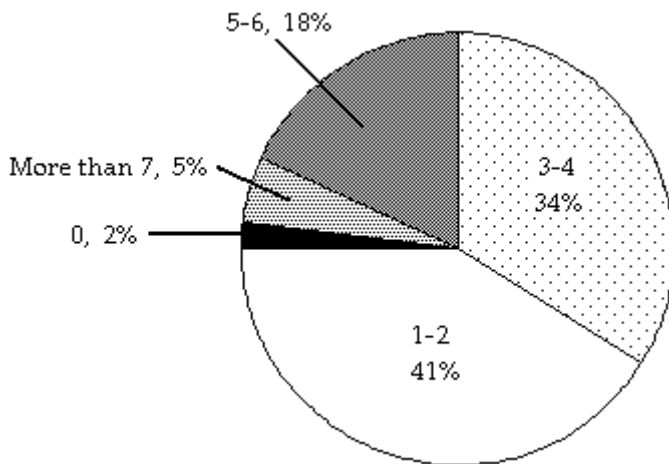
4) Is  $-4$  a solution to  $-3 = 9 - x$ ?

A) yes

B) no

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

The circle graph below shows the number of pizzas consumed by college students in a typical month. Use the graph to answer the question.



5) What percent of college students consume 1-2 pizzas in a typical month?

A) 41%

B) 2%

C) 18%

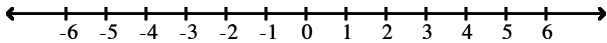
D) 34%

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

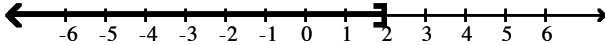
Graph the set of numbers given in interval notation. Then write an inequality statement in  $x$  describing the numbers graphed.

6)  $(-\infty, 2)$

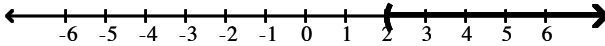
6) \_\_\_\_\_



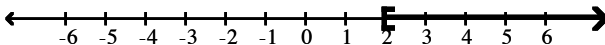
A)  $x \leq 2$



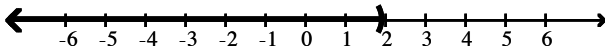
B)  $x > 2$



C)  $x \geq 2$



D)  $x < 2$



Solve.

7) Claire has received scores of 85, 88, 87, and 85 on her algebra tests. What is the minimum score she must receive on the fifth test to have an overall test score average of at least 88? (Hint: The average of a list of numbers is their sum divided by the number of numbers in the list.)

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

A) 94

B) 93

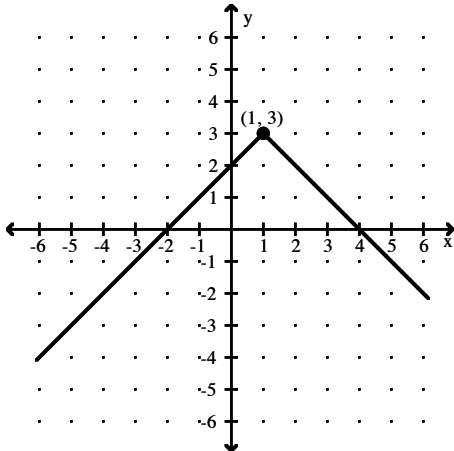
C) 95

D) 96

Find the domain and range of the function graphed.

8)

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



A) domain:  $(-\infty, \infty)$ ; range:  $(-\infty, 3]$

B) domain:  $(-\infty, 1]$ ; range:  $(-\infty, 3]$

C) domain:  $(-\infty, \infty)$ ; range:  $(-\infty, \infty)$

D) domain:  $(-\infty, 1) \cup (1, \infty)$ ; range:  $(-\infty, 3) \cup (3, \infty)$

Provide an appropriate response.

9) If  $f(5) = 750$ , write the corresponding ordered pair.

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

A) (0, 5)

B) (5, 750)

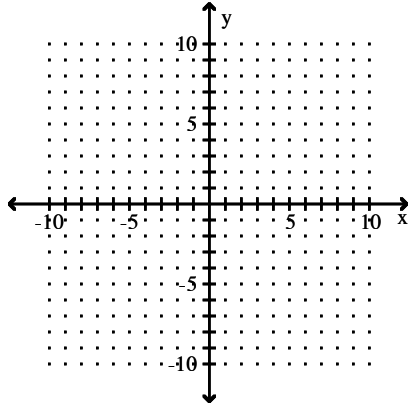
C) (0, 750)

D) (750, 5)

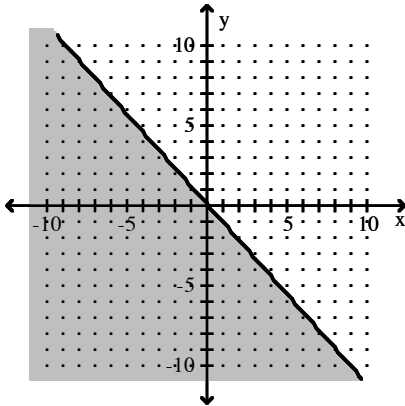
Graph the inequality.

10)  $9x + 8y \leq 0$

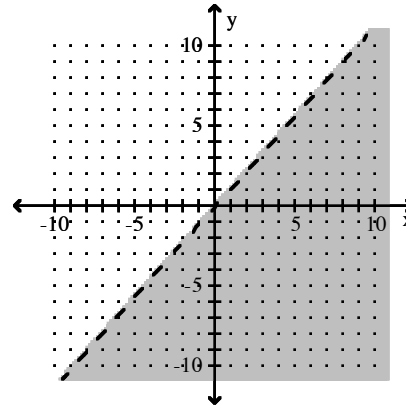
10) \_\_\_\_\_



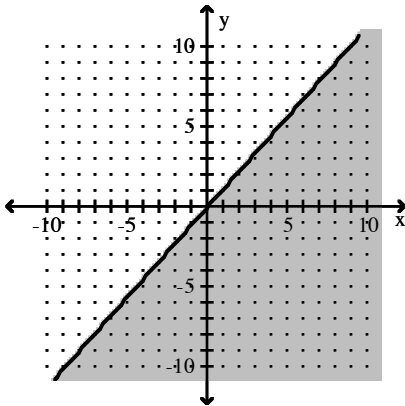
A)



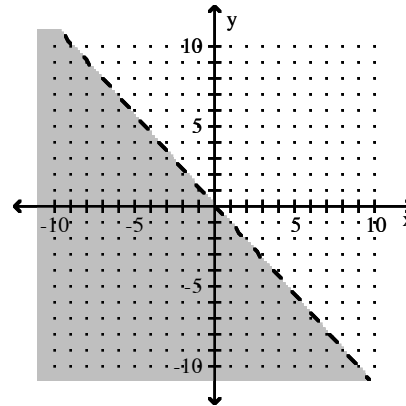
B)



C)



D)



Find an equation of the line through the pair of points. Write the equation in the form  $Ax + By = C$ .

11)  $(-2, 0)$  and  $(-7, -4)$

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

A)  $2x + 3y = -2$

B)  $-2x - 3y = -2$

C)  $-4x + 5y = 8$

D)  $4x + 5y = 8$

Without graphing, decide:

(a) Are the graphs of the equations identical lines, parallel lines, or lines intersecting at a single point?

(b) How many solutions does the system have?

12)  $\begin{cases} y - 6x = 3 \\ 5y = 30x + 15 \end{cases}$  12) \_\_\_\_\_

- A) lines intersecting at a single point; one solution  
B) identical lines; infinite number of solutions  
C) parallel lines; no solution

13)  $\begin{cases} 2x + y = 3 \\ 2x + y = 2 \end{cases}$  13) \_\_\_\_\_

- A) identical lines; infinite number of solutions  
B) lines intersecting at a single point; one solution  
C) parallel lines; no solution

Solve the system of equations by the substitution method.

14)  $\begin{cases} y = 5x - 4 \\ y = 7x - 5 \end{cases}$  14) \_\_\_\_\_

A) no solution

B)  $\left(-\frac{3}{2}, \frac{1}{2}\right)$

C)  $\left(\frac{1}{2}, -\frac{3}{2}\right)$

D) infinite number of solutions

Simplify the following by combining like terms.

15)  $3.7x^3 - 6.1x + 11.1 + 1.8x - x^3 - 8.3$  15) \_\_\_\_\_

A)  $3.7x^3 + 7.9x + 19.4$

B)  $1.2x^4$

C)  $2.7x^3 - 4.3x + 2.8$

D) cannot be simplified

Multiply.

16)  $(4z + 5)^2$  16) \_\_\_\_\_

A)  $16z^2 + 40z + 25$

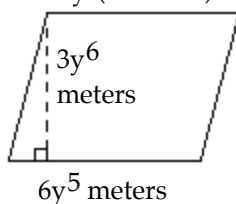
B)  $4z^2 + 40z + 25$

C)  $4z^2 + 25$

D)  $16z^2 + 25$

Solve.

17) The parallelogram has base length  $6y^5$  meters and height  $3y^6$  meters. Find its area as an expression in  $y$ . ( $A = b \cdot h$ ) 17) \_\_\_\_\_



A)  $9x^{11}$  sq m

B)  $9x^{30}$  sq m

C)  $18x^{11}$  sq m

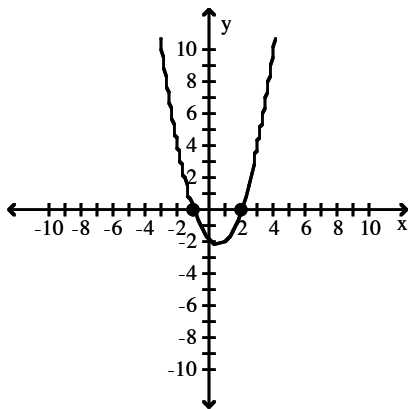
D)  $18x^{30}$  sq m

Match the equation with its graph.

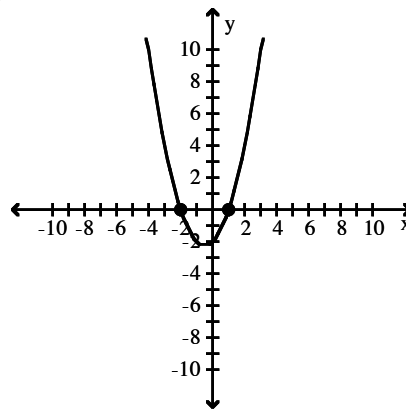
18)  $y = (x - 1)(x + 2)$

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

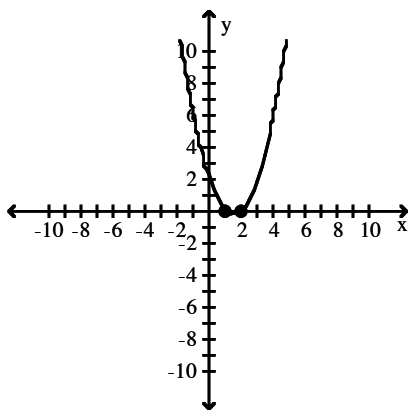
A)



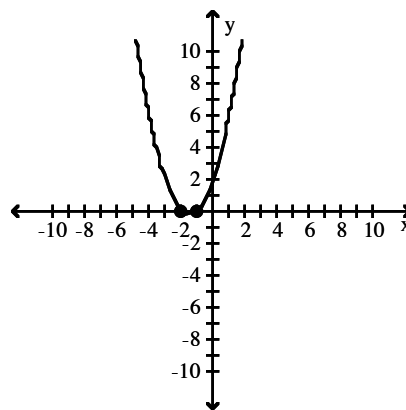
B)



C)



D)



Solve the equation.

19)  $5x^3 - 4x^2 - 9x = 0$

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

A)  $\frac{5}{9}, 1$

B)  $\frac{5}{9}, 0$

C)  $\frac{5}{9}, -1, 0$

D)  $\frac{9}{5}, -1, 0$

20)  $x(x + 11) = 0$

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

A) -1, -11

B) 11, 0

C) 1, -11

D) -11, 0

Factor the four-term polynomial by grouping.

21)  $10x^6 + 15x^3 - 6x^3 - 9$

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

A)  $(10x^3 + 3)(x^3 - 3)$

B)  $(5x^6 - 3)(2x + 3)$

C)  $(5x^3 + 3)(2x^3 - 3)$

D)  $(5x^3 - 3)(2x^3 + 3)$

Find the product and simplify.

22)  $\frac{3y}{6y+3} \cdot \frac{14y+7}{5}$

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

A)  $\frac{7y}{5}$

B)  $\frac{7y}{15}$

C)  $\frac{7}{5}$

D)  $\frac{y}{5}$

**Simplify the expression.**

23)  $\frac{(y+9)(y-6)}{(y-6)(y+8)}$  23) \_\_\_\_\_

A)  $\frac{y+9}{y+8}$

B)  $\frac{y-9}{y-8}$

C)  $\frac{y+6}{y+2}$

D)  $\frac{2y-6}{2y+2}$

**Multiply or divide as indicated.**

24)  $\frac{3x+4y}{x^2+4xy+4y^2} \cdot \frac{x+2y}{2}$  24) \_\_\_\_\_

A)  $\frac{5}{8xy}$

B)  $\frac{3x+4y}{2(x+2y)}$

C)  $\frac{3x^2+8xy+8y^2}{2x^2+8xy+8y^2}$

D)  $\frac{3x^2+8xy}{2x^2+8xy+8y^2}$

**Simplify the expression.**

25)  $\frac{36}{4m-12}$  25) \_\_\_\_\_

A)  $\frac{9}{m-3}$

B)  $\frac{9}{m+12}$

C)  $\frac{9}{m+3}$

D)  $\frac{9}{m-12}$

**Simplify the radical expression. Assume that variables represent positive numbers.**

26)  $\sqrt{18}$  26) \_\_\_\_\_

A) 6

B)  $2\sqrt{3}$

C) 4

D)  $3\sqrt{2}$

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

27)  $\frac{5}{\sqrt{17}-4}$  27) \_\_\_\_\_

A)  $5\sqrt{17}-20$

B)  $5\sqrt{17}+20$

C)  $\frac{5\sqrt{17}+20}{34}$

D)  $5\sqrt{17}-4$

**Solve the equation.**

28)  $\sqrt{2x-1}+9=14$  28) \_\_\_\_\_

A)  $\frac{1}{13}$

B) no solution

C) 13

D) 52

**Simplify the expression.**

29)  $-32^{1/5}$  29) \_\_\_\_\_

A) -8

B) 16

C) 32

D) -2

**Factor the trinomial completely. If the polynomial cannot be factored choose E**

30)  $8x^2-24xy-32y^2$  30) \_\_\_\_\_

A)  $(8x-8y)(x+4y)$

B)  $8(x-y)(x+4y)$

C) prime

D)  $8(x+y)(x-4y)$

## Answer Key

Testname: UNTITLED4

- 1) D
- 2) D
- 3) A
- 4) B
- 5) A
- 6) D
- 7) C
- 8) A
- 9) B
- 10) A
- 11) C
- 12) B
- 13) C
- 14) C
- 15) C
- 16) A
- 17) C
- 18) B
- 19) D
- 20) D
- 21) D
- 22) A
- 23) A
- 24) B
- 25) A
- 26) D
- 27) B
- 28) C
- 29) D
- 30) D