Exam II Review

Name_____

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

Solve the problem.

1) Suppose that $f(x) = -x - 8$ and $g(x) = x - 12$. 1) _____

(a) Solve $f(x) > 0$.

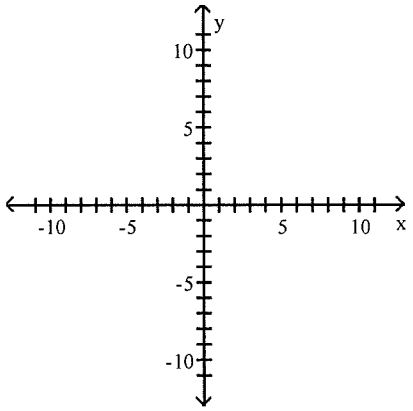
(b) Solve $g(x) > 0$.

(c) Solve $f(x) \leq g(x)$.

2) Marty's Tee Shirt & Jacket Company is to produce a new line of jackets with an embroidery of a Great Pyrenees dog on the front. There are fixed costs of $610 to set up for production, and variable costs of $35 per jacket. Write an equation that can be used to determine the total cost, C(x), encountered by Marty's Company in producing x jackets. 2) _____

Graph the function f by starting with the graph of $y = x^2$ and using transformations (shifting, compressing, stretching, and/or reflection).

3) $f(x) = x^2 + 8x + 7$ 3) _____

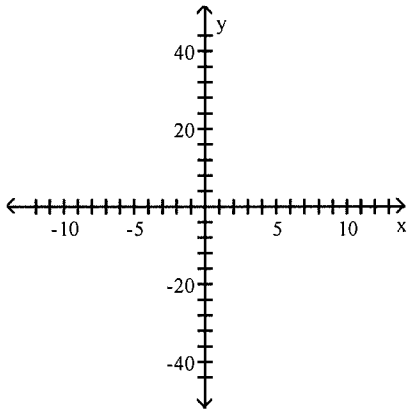


Find the vertex and axis of symmetry of the graph of the function.

4) $f(x) = -7x^2 - 14x - 3$ 4) _____

Graph the function using its vertex, axis of symmetry, and intercepts.

5) $f(x) = -x^2 + 8x$ 5) _____



Solve the problem.

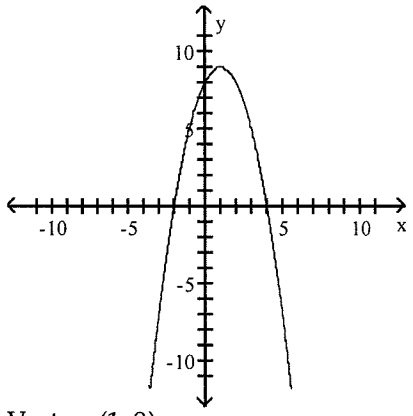
6) The owner of a video store has determined that the cost C, in dollars, of operating the store is approximately given by $C(x) = 2x^2 - 26x + 770$, where x is the number of videos rented daily. Find the lowest cost to the nearest dollar. 6) _____

7) You have 236 feet of fencing to enclose a rectangular region. Find the dimensions of the rectangle that maximize the enclosed area. 7) _____

8) You have 72 feet of fencing to enclose a rectangular plot that borders on a river. If you do not fence the side along the river, find the length and width of the plot that will maximize the area. 8) _____

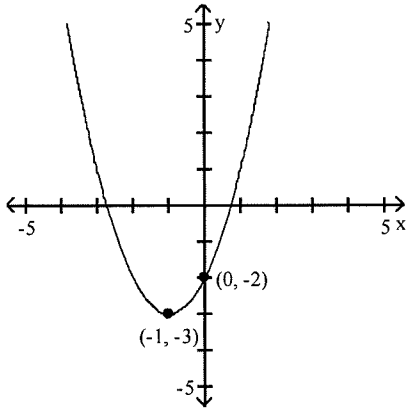
Determine the quadratic function whose graph is given.

9) 9) _____



Vertex: (1, 9)
y-intercept: (0, 8)

10) 10) _____



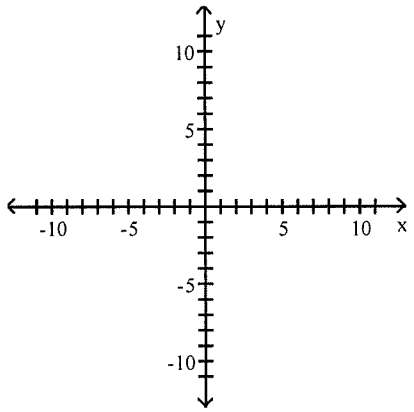
State whether the function is a polynomial function or not. If it is, give its degree. If it is not, tell why not.

11) $f(x) = 9 - \frac{3}{x^5}$ 11) _____

12) $f(x) = x^{3/2} - x^5 + 5$ 12) _____

Use transformations of the graph of $y = x^4$ or $y = x^5$ to graph the function.

13) $f(x) = -2(x + 2)^4 + 3$ 13) _____



Form a polynomial whose zeros and degree are given.

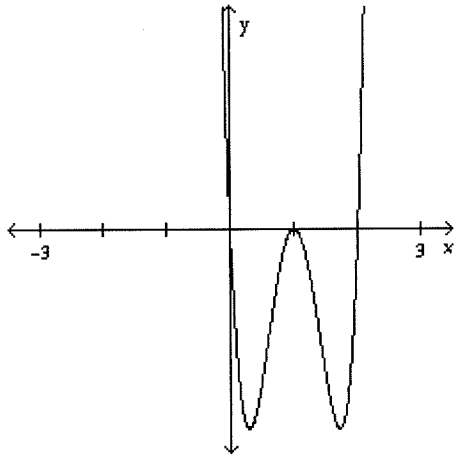
14) Zeros: -1, 1, - 9; degree 3 14) _____

15) Zeros: -3, -4, 4; degree 3 15) _____

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

Solve the problem.

16) Which of the following polynomial functions might have the graph shown in the illustration below? 16) _____



A) $f(x) = x^2(x - 2)^2(x - 1)^2$

B) $f(x) = x^2(x - 2)(x - 1)$

C) $f(x) = x(x - 2)^2(x - 1)$

D) $f(x) = x(x - 2)(x - 1)^2$

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

Find the x- and y-intercepts of f.

17) $f(x) = (x + 3)(x - 2)(x + 2)$ 17) _____

Find the domain of the rational function.

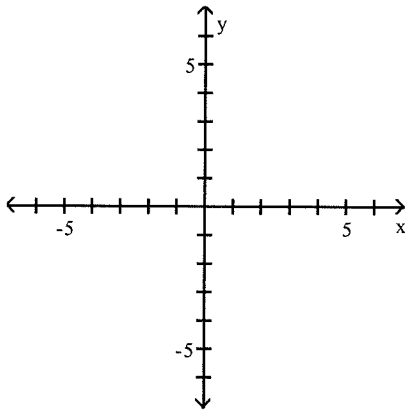
18) $R(x) = \dfrac{x + 3}{x^2 - 4}$ 18) _____

19) $H(x) = \dfrac{x + 5}{x^4 + 4}$ 19) _____

20) $G(x) = \dfrac{x}{x^3 - 27}$ 20) _____

Graph the function using transformations.

21) $f(x) = \dfrac{-2}{x - 4}$ 21) _____



Find the vertical asymptotes of the rational function.

22) $R(x) = \dfrac{x + 8}{x^2 - 25}$ 22) _____

23) $Q(x) = \dfrac{x + 7}{x^2 + 1}$ 23) _____

Give the equation of the horizontal asymptote, if any, of the function.

24) $H(x) = \dfrac{8x - 4}{x - 9}$ 24) _____

25) $G(x) = \dfrac{x^2 + 4x - 2}{x - 2}$ 25) _____

26) $Q(x) = \dfrac{-x^2 + 16}{x^2 + 5x + 4}$ 26) _____

Give the equation of the oblique asymptote, if any, of the function.

27) $T(x) = \dfrac{x^2 - 9x + 4}{x + 6}$ 27) _____

Find the indicated intercept(s) of the graph of the function.

28) y-intercept of $f(x) = \dfrac{x - 15}{x^2 + 15x - 8}$ 28) _____

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

Solve the system of equations. If the system has no solution, say that it is inconsistent.

29) 29) _____

$\begin{cases} x - 4y = -10 \\ 2x - 8y = -17 \end{cases}$

A) x = 4, y = 2; (4, 2)
B) x = 2, y = 4; (2, 4)
C) x = 2, y = 3; (2, 3)
D) inconsistent

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

30) 30) _____

$\begin{cases} \frac{x}{2} + \frac{y}{3} = 4 \\ \frac{x}{4} + \frac{y}{6} = 2 \end{cases}$

Solve the system of equations by substitution.

31) 31) _____

$\begin{cases} \frac{1}{5}x - y = -\frac{4}{5} \\ x + 8y = -4 \end{cases}$

Solve the system of equations by elimination.

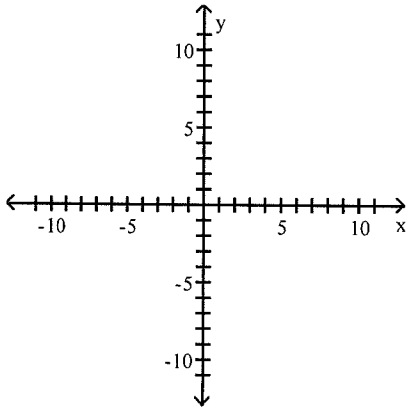
32) 32) _____

$\begin{cases} \frac{7}{12}x - y = 10 \\ \frac{5}{9}x + 2y = 11 \end{cases}$

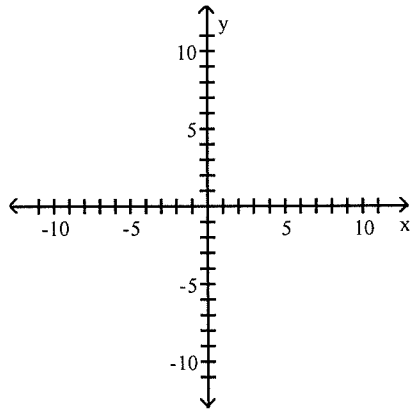
Graph the equations of the system. Then solve the system to find the points of intersection.

33) 33) _____

$\begin{cases} y = x^2 - 8x + 16 \\ y = -x + 6 \end{cases}$



34) $\begin{cases} x^2 + y^2 = 81 \\ x^2 - y^2 = 81 \end{cases}$ 34) _____

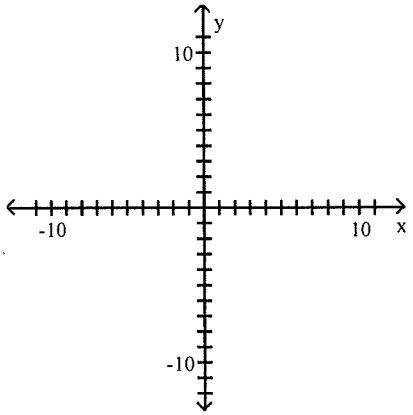


Solve the system of equations using substitution.

35) $\begin{cases} y = 6x^2 - 5x \\ y = 2x + 3 \end{cases}$ 35) _____

Graph the inequality.

36) $3x + y \leq -2$ 36) _____



Graph the solution set of the system of inequalities or indicate that the system has no solution.

37) 37) _____

$$\begin{cases} -x + 2y \leq -6 \\ 3x + 2y > -18 \end{cases}$$