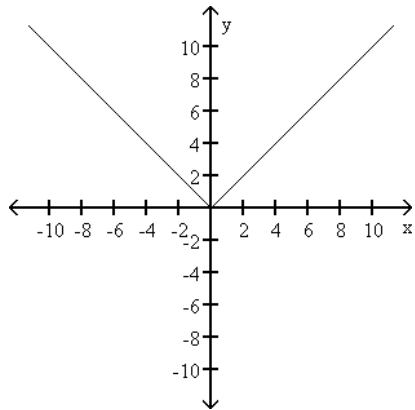


Name _____

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

The graph of a function is given. Decide whether it is even, odd, or neither.

1)



A) even

B) odd

C) neither

1) _____

Determine algebraically whether the function is even, odd, or neither.
Show your work neatly.

2) $f(x) = \frac{x}{x^2 - 3}$

A) even

B) odd

C) neither

2) _____

Find the function.

- 3) Find the function that is finally graphed after the following transformations are applied to the graph of $y = |x|$. The graph is shifted right 3 units, stretched by a factor of 3, shifted vertically down 2 units, and finally reflected across the x-axis.

3) _____

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

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

C) $y = -(3|x - 3| - 2)$

D) $y = -(3|x + 3| - 2)$

Solve the problem.

- 4) A truck rental company rents a moving truck one day by charging \$27 plus \$0.13 per mile. Write a linear equation that relates the cost C , in dollars, of renting the truck to the number x of miles driven. What is the cost of renting the truck if the truck is driven 110 miles?

4) _____

A) $C(x) = 0.13x + 27$; \$41.30

B) $C(x) = 0.13x - 27$; -\$12.70

C) $C(x) = 0.13x + 27$; \$28.43

D) $C(x) = 27x + 0.13$; \$2970.13

Find the vertex and axis of symmetry of the graph of the function, by redcing $f(x)$ to the form $a(x-h)^2 + k$.

5) $f(x) = x^2 + 8x + 7$

A) $(4, -9); x = 4$

B) $(-4, -9); x = -4$

C) $(-4, 9); x = -4$

D) $(4, 9); x = 4$

5) _____

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

6) $f(x) = \frac{2x^3 + 11x^2 + 5x - 1}{x^2 + 6x + 5}$

A) $y = 0$

B) $y = 2x - 1$

C) $y = 2x$

D) $y = 2x + 1$

6) _____

Use the Remainder Theorem to find the remainder when $f(x)$ is divided by $x - c$.

7) $f(x) = 5x^6 - 3x^3 + 8; x + 1$

A) 16

B) 6

C) 10

D) 8

7) _____

Give the maximum number of zeros the polynomial function may have. Use Descartes's Rule of Signs to determine how many positive and how many negative zeros it may have.

8) $f(x) = -3x^9 + x^3 - x^2 + 7$

8) _____

- A) 9; 3 or 1 positive zeros; 2 or 0 negative zeros
- B) 9; 2 or 0 positive zeros; 2 or 0 negative zeros
- C) 9; 3 or 1 positive zeros; 3 or 1 negative zeros
- D) 9; 2 or 0 positive zeros; 3 or 1 negative zeros

List the potential rational zeros of the polynomial function. Do not find the zeros.

9) $f(x) = 6x^4 + 4x^3 - 3x^2 + 2$

9) _____

A) $\pm \frac{1}{6}, \pm \frac{1}{3}, \pm \frac{1}{2}, \pm \frac{2}{3}, \pm 1, \pm 2$

B) $\pm \frac{1}{6}, \pm \frac{1}{3}, \pm \frac{1}{2}, \pm \frac{2}{3}, \pm 1, \pm 2, \pm 3$

C) $\pm \frac{1}{2}, \pm \frac{3}{2}, \pm 1, \pm 2, \pm 3, \pm 6$

D) $\pm \frac{1}{6}, \pm \frac{1}{3}, \pm \frac{1}{2}, \pm 1, \pm 2$

Form a polynomial $f(x)$ with real coefficients having the given degree and zeros.

10) Degree 3; zeros: $1 + i$ and -5

10) _____

A) $f(x) = x^3 + x^2 - 8x + 10$

B) $f(x) = x^3 - 5x^2 - 8x - 12$

C) $f(x) = x^3 + 3x^2 - 8x + 10$

D) $f(x) = x^3 + 3x^2 + 10x - 8$

Find the domain of the composite function $f \circ g$.

11) $f(x) = \frac{10}{x+3}$; $g(x) = x + 10$

11) _____

A) $\{x \mid x \neq -3\}$

B) $\{x \mid x \neq -13\}$

C) $\{x \mid x \neq -3, x \neq -10\}$

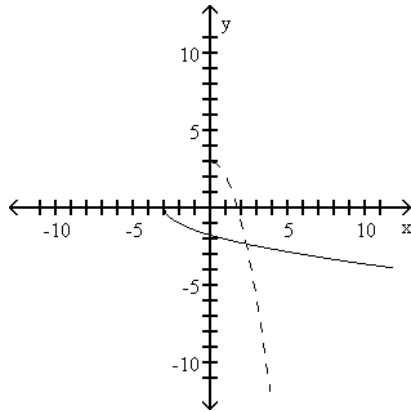
D) $\{x \mid x \text{ is any real number}\}$

Graph the function as a solid line or curve and its inverse as a dashed line or curve on the same axes.

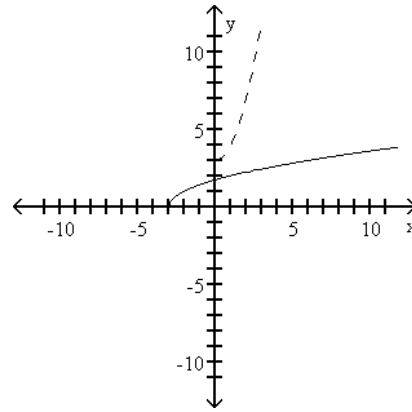
12) $f(x) = \sqrt{x+3}$

12) _____

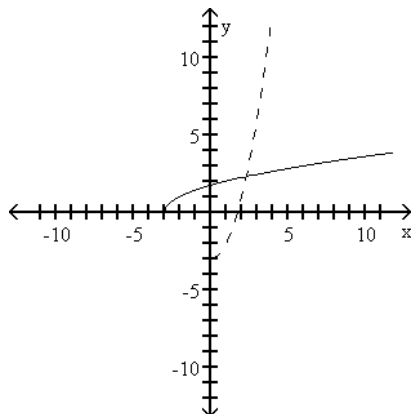
A)



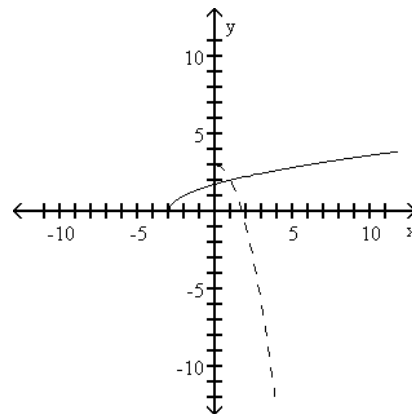
B)



C)



D)



Solve the inequality. Express the solution using interval notation.

13) $\frac{x-1}{x+7} < 1$

13) _____

A) $(-7, 1)$

B) $(-7, \infty)$

C) $(-\infty, -7)$ or $(1, \infty)$

D) $(-\infty, -7)$

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

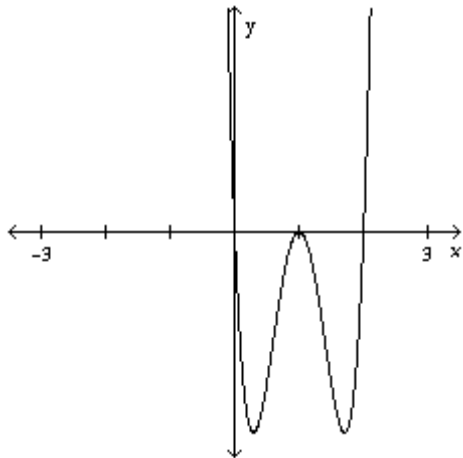
14)

The graph of a polynomial function, $P(x)$, of degree 4 is given below.

Using the graph determine the following:

(a) The zeros of $P(x)$ and their multiplicity.

(b) Given $P(1.5) = -3$, find the polynomial, $P(x)$.



(a) The zeros of $P(x)$:

(b) The Equation of $P(x)$:

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

Graph the function.

15) Given $f(x) = \frac{x^2 + x - 42}{x^2 - x - 56}$, determine the following:

15) _____

a. domain of $f(x)$, _____

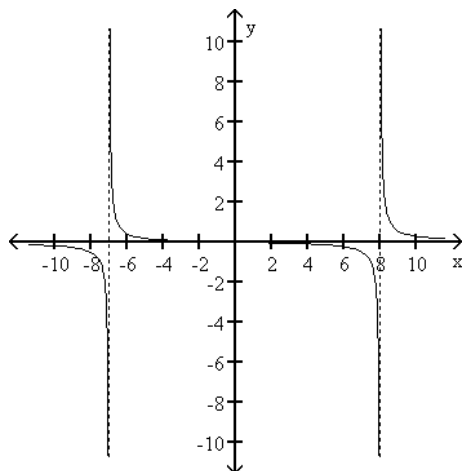
b. Equations of the vertical asymptotes, if any _____

c. Equations of the horizontal asymptotes, if any _____

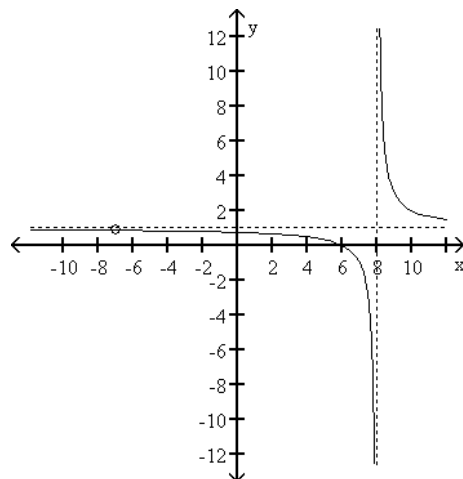
d. x and y coordinates of the 'holes', if any _____

e. which of the graphs , below could be the graph of $f(x)$? A , B, C , D

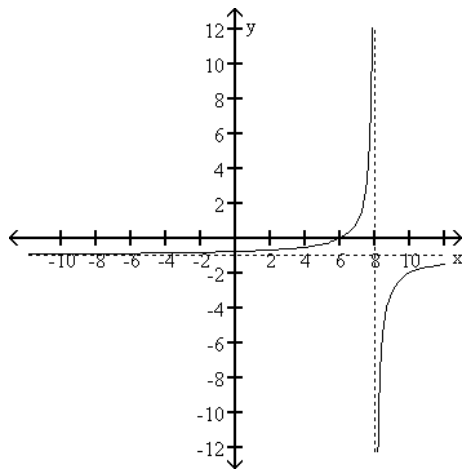
A)



B)



C)



D)

