

SHOW/EXPLAIN ALL WORK FOR ANY CREDIT

(2 pts) Determine whether the equation defines y as a function of x .

1) $y^2 + x = 7$

1) _____

A)

B) not a function

(2 pts) Find the domain of the function.

2) $f(x) = \frac{x}{x^2 + 5}$

2) _____

A) all real numbers

B)

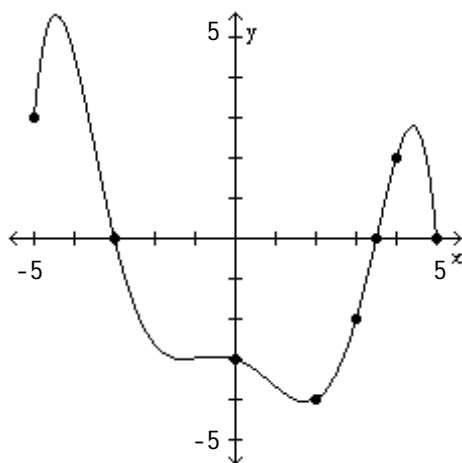
C)

D)

(3 pts) The graph of a function f is given. Use the graph to answer the question.

3) For what numbers x is $f(x) > 0$?

3) _____



A)

B)

C) $[-5, -3), (3.5, 5)$

D)

(8 pts) Solve the equation.

4) $|x^2 - 4x - 4| = 8$

4) _____

A) $\{-2, 2, 6\}$

B)

C)

D)

(4 pts) For the given functions f and g , find the requested function and state its domain.

5) $f(x) = \sqrt{x}$; $g(x) = 6x - 1$

5) _____

Find $\frac{f}{g}$.

A)

B)

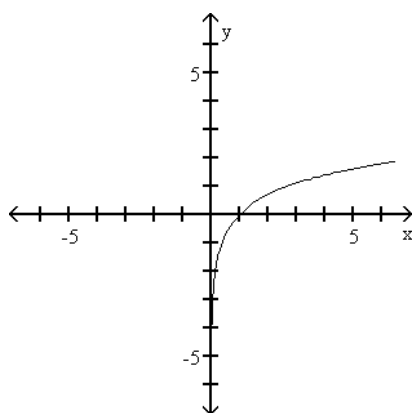
C)

D) $\left(\frac{f}{g}\right)(x) = \frac{\sqrt{x}}{6x - 1}; \{x | x \geq 0, x \neq \frac{1}{6}\}$

(8 pts) Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the x -axis, the y -axis, or the origin.

6)

6) _____



A) function

domain: $\{x | x > 0\}$

range: all real numbers

intercept: $(1, 0)$

symmetry: none

B)

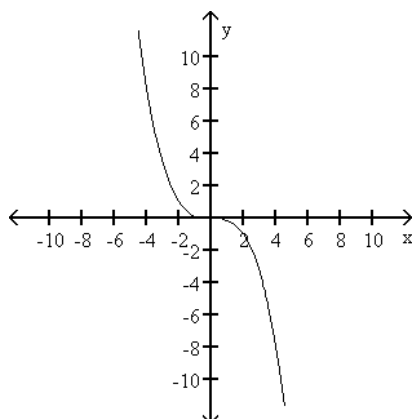
C)

D)

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

7)

7) _____



A)

B) odd

C)

(4 pts) Determine algebraically whether the function is even, odd, or neither.

8) $f(x) = \frac{x}{x^2 - 4}$

8) _____

A)

B) odd

C)

(8 pts) Write the equation. Do not solve!!

9) Alan is building a garden shaped like a rectangle with a semicircle attached to one short side. If he has 40 feet of fencing to go around it, express the area A of the garden as a function of the width or length (your choice) of the rectangle.

9) _____

A)

B)

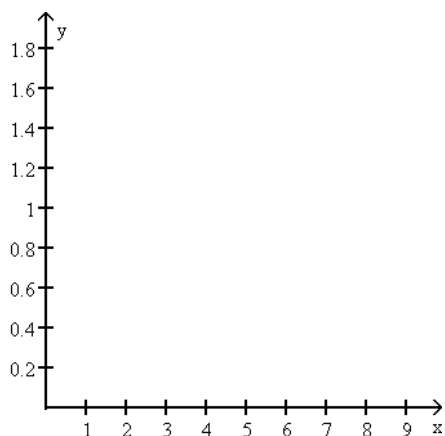
C)

D) $A = 20w + \left(\frac{1}{2} - \frac{\pi}{4}\right)w^2$

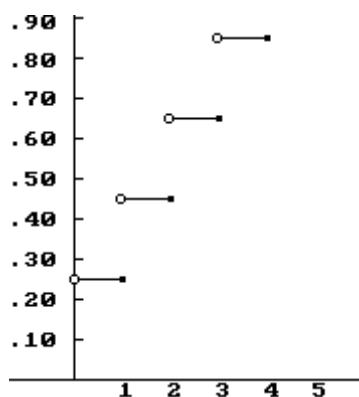
(4 pts) Solve the problem.

- 10) Assume it costs 25 cents to mail a letter weighing one ounce or less, and then 20 cents for each additional ounce or fraction of an ounce. Let $L(x)$ be the cost of mailing a letter weighing x ounces. Graph $y = L(x)$.

10) _____



A)

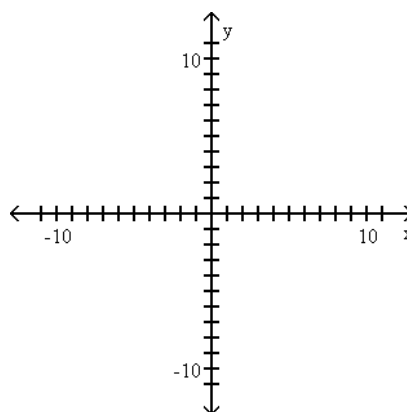
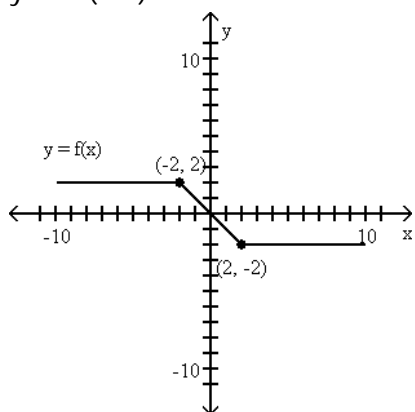


B)

(6 pts) Use the accompanying graph of $y = f(x)$ to sketch the graph of the indicated equation.

- 11) $y = -2f(x-1)$

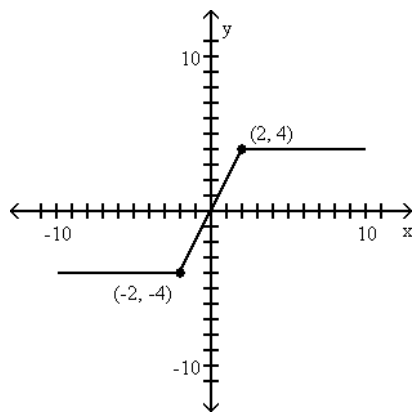
11) _____



A)

B)

C)



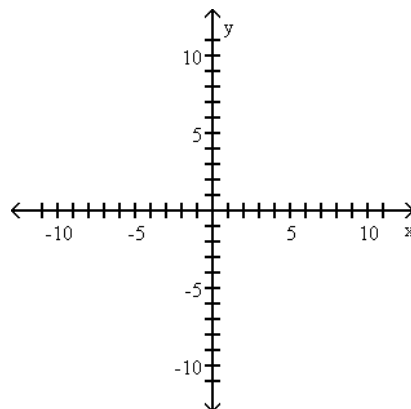
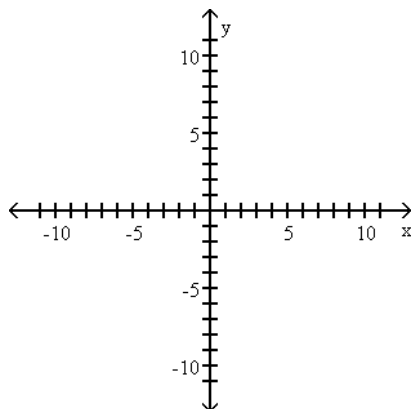
D)

Shift right one unit.

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

12) $f(x) = -7x^2 + 14x - 2$

12) _____

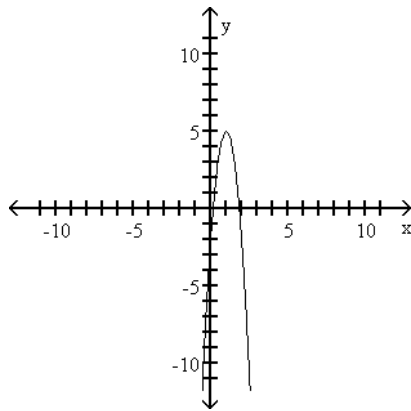


A)

B)

C)

D)



(8 pts) Solve the problem.

13) You have 108 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.

13) _____

A)

B) length: 54 ft, width: 27 ft

C)

D)

(8 pts) Solve the inequality.

14) $12(x^2 - 1) > 7x$

14) _____

A)

B)

C) $\left\{x \mid x < -\frac{3}{4} \text{ or } x > \frac{4}{3}\right\}; \left(-\infty, -\frac{3}{4}\right) \text{ or } \left(\frac{4}{3}, \infty\right)$

D)