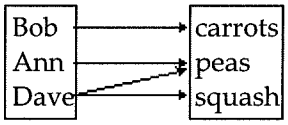
Exam 1 Review

Name_____

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

Determine whether the relation represents a function. If it is a function, state the domain and range.

1) 

1) _____

A) function
domain: {carrots, peas, squash}
range: {Bob, Ann, Dave}

B) function
domain: {Bob, Ann, Dave}
range: {carrots, peas, squash}

C) not a function

Find the value for the function.

2) Find $f(x + h)$ when $f(x) = 2x^2 - 2x - 5$. 2) _____

A) $2x^2 + 2h^2 + 2x + 2h - 5$
B) $2x^2 + 4xh + 2h^2 - 2x - 2h - 5$
C) $2x^2 + 2xh + 2h^2 - 2x - 2h - 5$
D) $2x^2 + 2h^2 - 2x - 2h - 5$

Find the domain of the function.

3) $h(x) = \dfrac{x - 4}{x^3 - 64x}$ 3) _____

A) $\{x \mid x \neq 0\}$
B) all real numbers
C) $\{x \mid x \neq 4\}$
D) $\{x \mid x \neq -8, 0, 8\}$

4) $f(x) = \sqrt{10 - x}$ 4) _____

A) $\{x \mid x \neq 10\}$
B) $\{x \mid x \leq \sqrt{10}\}$
C) $\{x \mid x \leq 10\}$
D) $\{x \mid x \neq \sqrt{10}\}$

5) $\dfrac{x}{\sqrt{x - 2}}$ 5) _____

A) all real numbers
B) $\{x \mid x > 2\}$
C) $\{x \mid x \geq 2\}$
D) $\{x \mid x \neq 2\}$

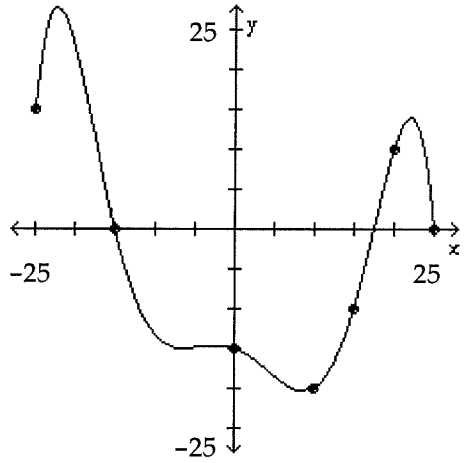
For the given functions f and g, find the requested function and state its domain.

6) $f(x) = 6x - 3$; $g(x) = 8x - 4$ 6) _____
Find $f - g$.

A) $(f - g)(x) = 14x - 7$; $\{x \mid x \neq 1\}$
B) $(f - g)(x) = 2x - 1$; all real numbers
C) $(f - g)(x) = -2x - 7$; $\{x \mid x \neq -\frac{7}{2}\}$
D) $(f - g)(x) = -2x + 1$; all real numbers

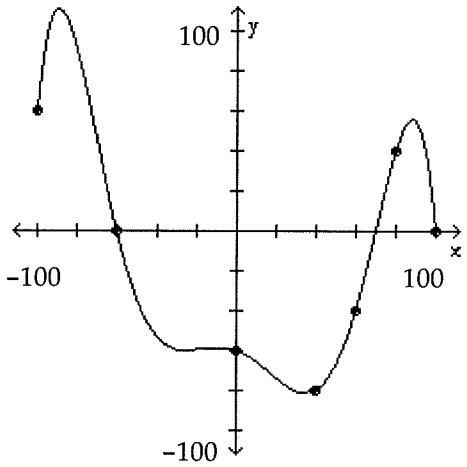
The graph of a function f is given. Use the graph to answer the question.

7) Use the graph of f given below to find f(25). 7) _____



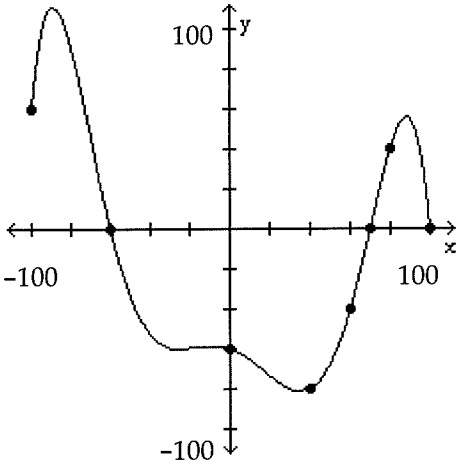
A) 30 B) 25 C) 50 D) 0

8) Is f(−100) positive or negative? 8) _____



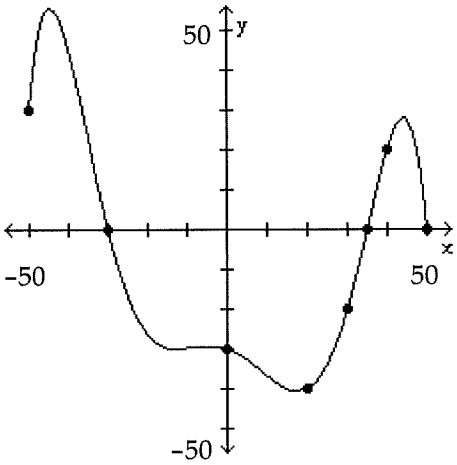
A) positive B) negative

9) For what numbers x is f(x) = 0? 9) _____



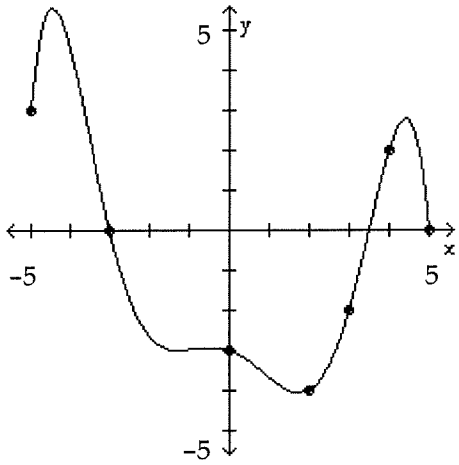
A) -60, 70, 100
B) (-100, -60), (70, 100)
C) -60
D) (-60, 70)

10) For what numbers x is f(x) > 0? 10) _____



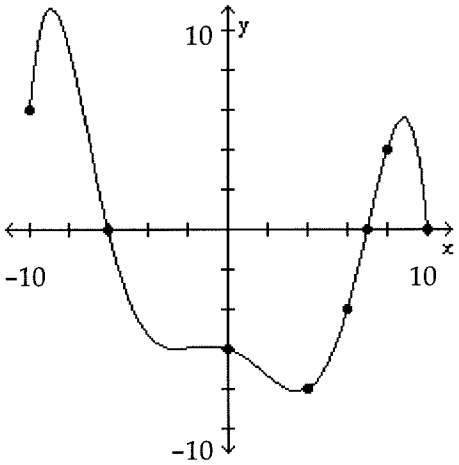
A) (-∞ -30)
B) (-30, 35)
C) [-50, -30), (35, 50)
D) (-30, ∞)

11) What is the domain of f? 11) _____



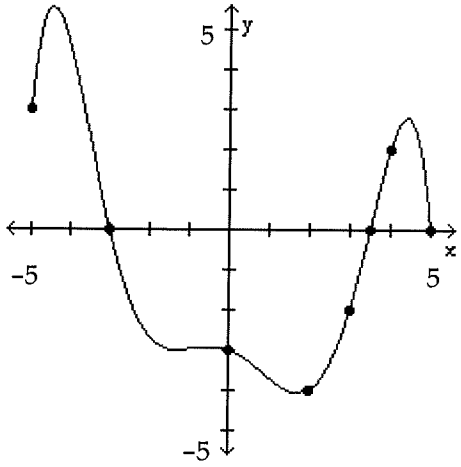
A) $\{x \mid x \geq 0\}$
B) $\{x \mid -5 \leq x \leq 5\}$
C) all real numbers
D) $\{x \mid -4 \leq x \leq 5.5\}$

12) What are the x-intercepts? 12) _____



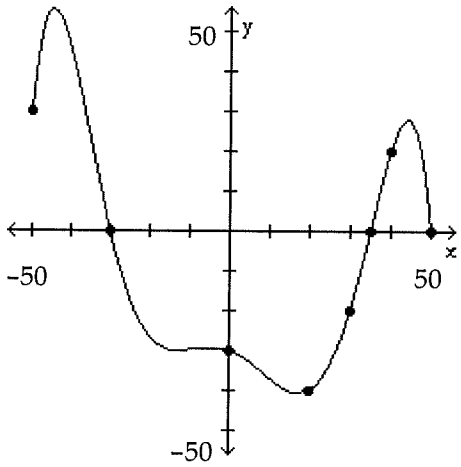
A) -10, -6, 7, 10
B) -6, 7, 10
C) -6, 7
D) -6

13) How often does the line y = −5 intersect the graph? 13) _____



A) once
B) twice
C) three times
D) does not intersect

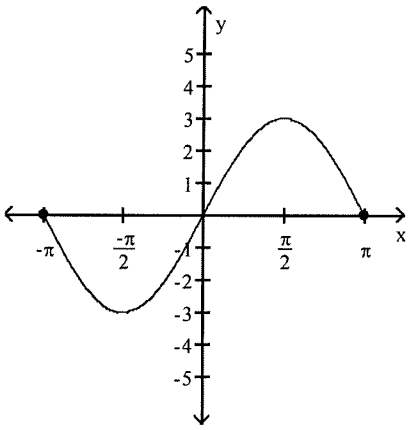
14) For which of the following values of x does f(x) = 30? 14) _____



A) −50
B) 0
C) 30
D) 80

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

15) 15) _____



A) even B) odd C) neither

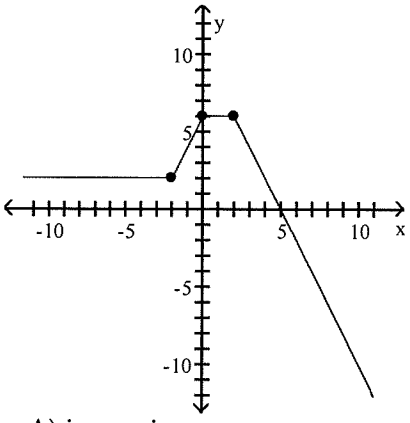
Determine algebraically whether the function is even, odd, or neither.

16) $f(x) = -5x^4 - x^2$ 16) _____

A) even B) odd C) neither

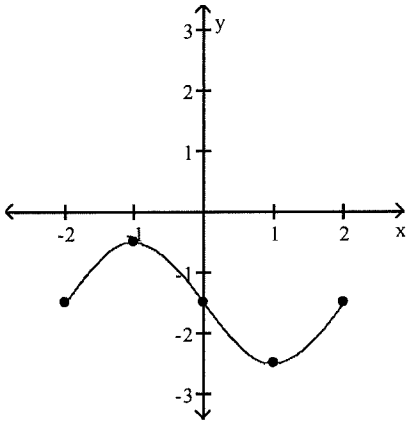
The graph of a function is given. Determine whether the function is increasing, decreasing, or constant on the given interval.

17) $(2, \infty)$ 17) _____



A) increasing B) constant C) decreasing

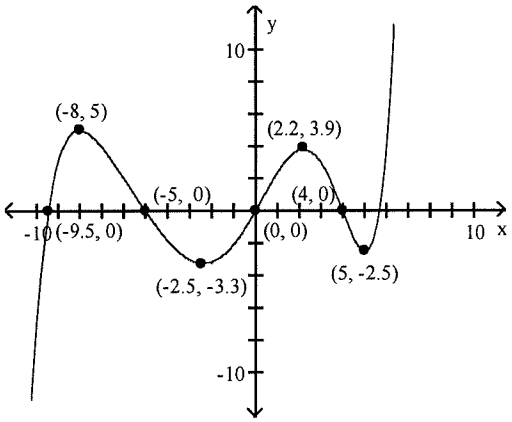
18) (1, 2) 18) _____



A) decreasing B) constant C) increasing

The graph of a function f is given. Use the graph to answer the question.

19) 19) _____



Find the numbers, if any, at which f has a local maximum. What are the local maxima?

A) f has a local maximum at x = 5 and 3.9; the local maximum at 5 is −8; the local maximum at 3.9 is 2.2

B) f has a local maximum at x = −8 and 2.2; the local maximum at −8 is 5; the local maximum at 2.2 is 3.9

C) f has a local minimum at x = −8 and 2.2; the local minimum at −8 is 5; the local minimum at 2.2 is 3.9

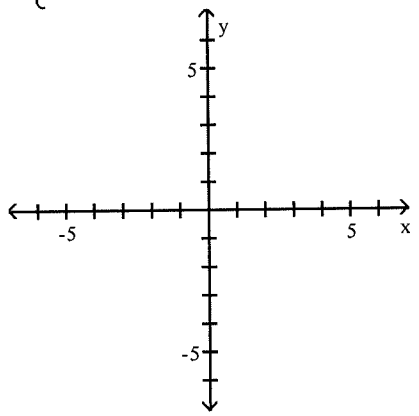
D) f has a local minimum at x = 5 and 3.9; the local minimum at 5 is −8; the local minimum at 3.9 is 2.2

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

Graph the function.

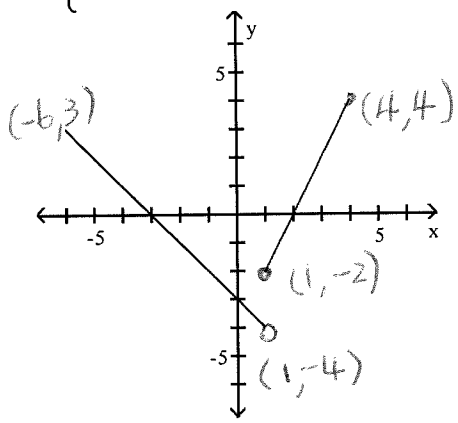
20) 20) _____

$$f(x) = \begin{cases} -x + 3 & \text{if } x < 2 \\ 2x - 3 & \text{if } x \geq 2 \end{cases}$$



21) 21) _____

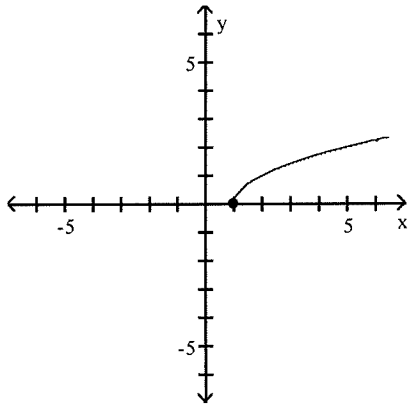
$$f(x) = \begin{cases} & \text{if } x < 1 \\ & \text{if } x \geq 1 \end{cases}$$



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

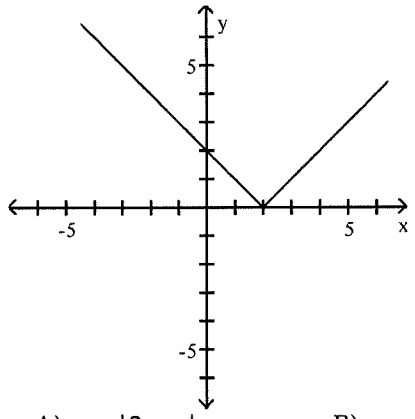
Match the correct function to the graph.

22) 22) _____



A) $y = x - 1$ B) $y = \sqrt{x - 1}$ C) $y = \sqrt{x + 1}$ D) $y = \sqrt{x}$

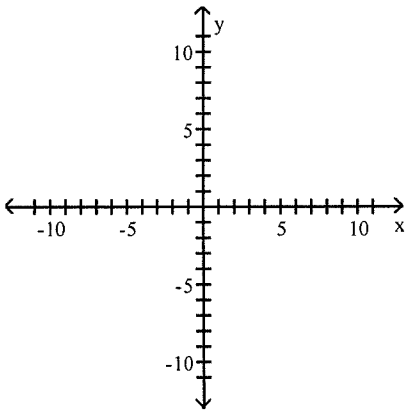
23) 23) _____



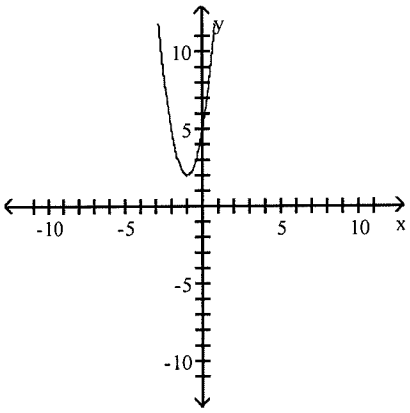
A) $y = |2 - x|$ B) $y = |1 - x|$ C) $y = |x + 2|$ D) $y = x - 2$

Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

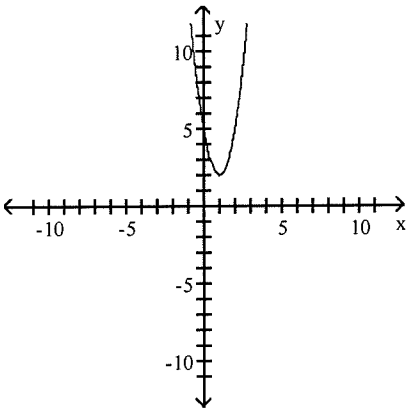
24) $f(x) = 3(x + 1)^2 - 2$ 24) _____



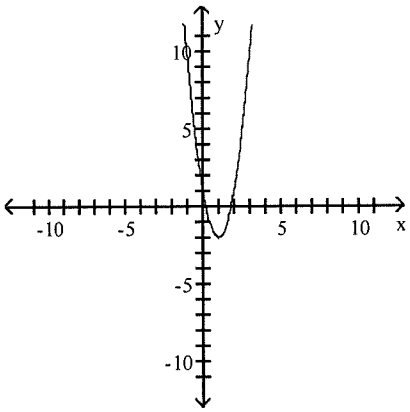
A)



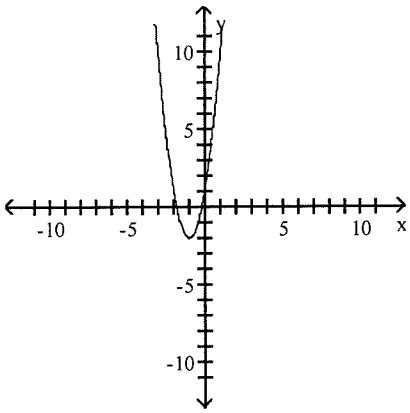
B)



C)



D)



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

Solve the problem.

25) A developer wants to enclose a rectangular grassy lot that borders a city street for parking. If the developer has 312 feet of fencing and does not fence the side along the street, 25) _____

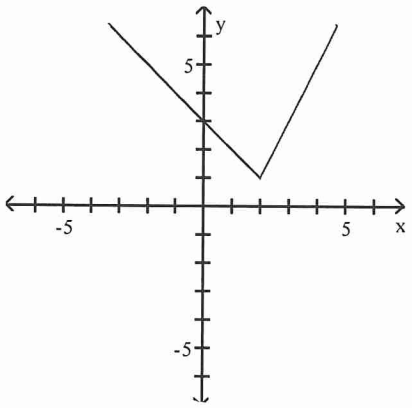
A. Find the function of area

B. Find domain and range

C. what is the largest area that can be enclosed?

Answer Key
Testname: UNTITLED1

1) C
2) B
3) D
4) C
5) B
6) D
7) D
8) A
9) A
10) C
11) B
12) B
13) D
14) A
15) B
16) A
17) C
18) C
19) B
20)



21)

$$f(x) = \begin{cases} -x-3, & x<1 \\ 2x-4, & x \geq 1 \end{cases}$$

22) B
23) A
24) D
25) 12,168 ft^2

(c)

(a) $A(w) = -2w^2 + 312w$

(b) $0 < w < 156$

$0 < A < 12,168$