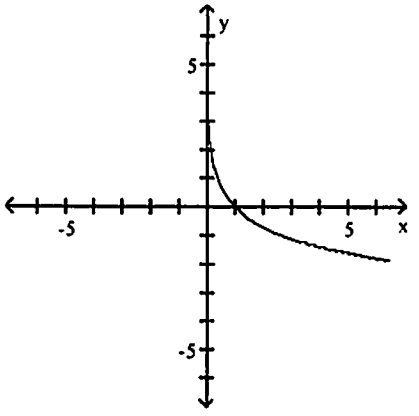
Math 1050 Review 3.2 - 3.6 Name_____

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.

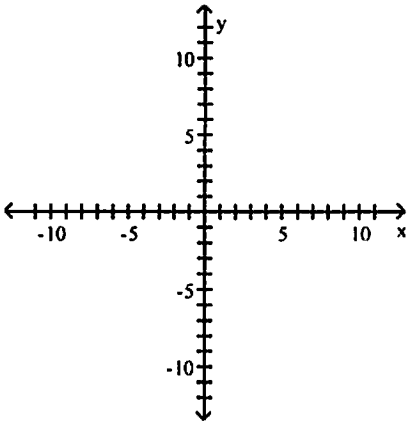
1)



Graph the function.

2)

$$f(x) = \begin{cases} x + 3 & \text{if } -7 \le x < 2 \\ -4 & \text{if } x = 2 \\ -x + 4 & \text{if } x > 2 \end{cases}$$



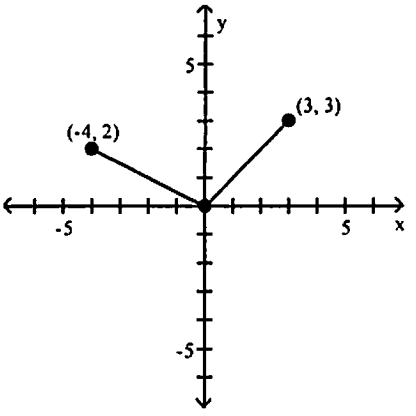
Find the domain of the function.

3)

$$f(x) = \begin{cases} -5x & \text{if } x \ne 0 \\ -5 & \text{if } x = 0 \end{cases}$$

The graph of a piecewise-defined function is given. Write a definition for the function.

4)



Write the equation of a sine function that has the given characteristics.

5) The graph of $y = |x|$, shifted 9 units to the right

Suppose the point (2, 4) is on the graph of y = f(x). Find a point on the graph of the given function.

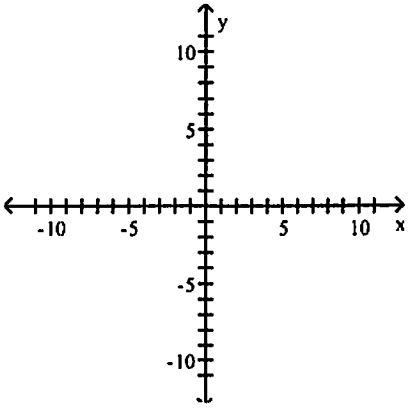
6) $y = f(x + 2)$

Solve the problem.

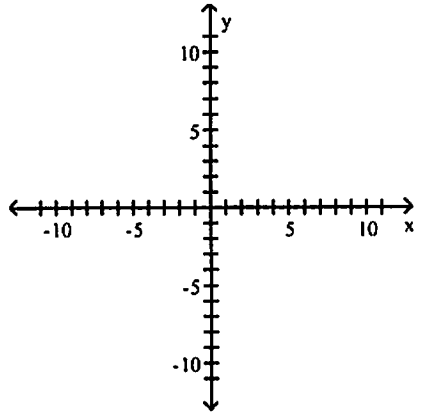
7) Suppose that the x-intercepts of the graph of $y = f(x)$ are 2 and 3. What are the x-intercepts of $y = f(x - 6)$?

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

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

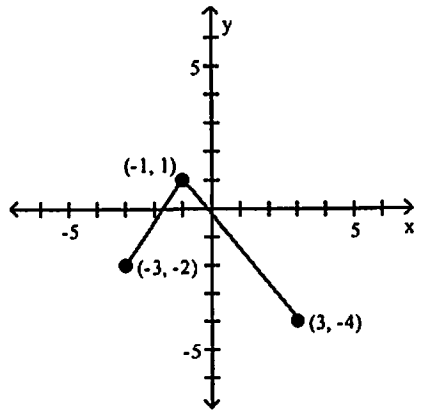


9) $f(x) = \sqrt{x+4} - 2$



Using transformations, sketch the graph of the requested function.

10) The graph of a function f is illustrated. Use the graph of f as the first step toward graphing the function F(x), where $F(x) = f(x + 2) - 1$.

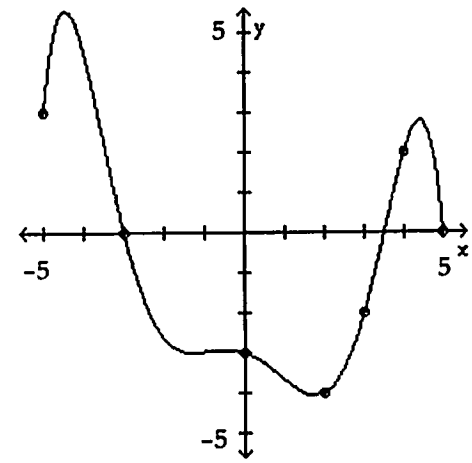


Write the equation of a sine function that has the given characteristics.

11) The graph of $y = \sqrt{x}$, shifted 5 units to the left

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

12) Is f(-5) positive or negative?



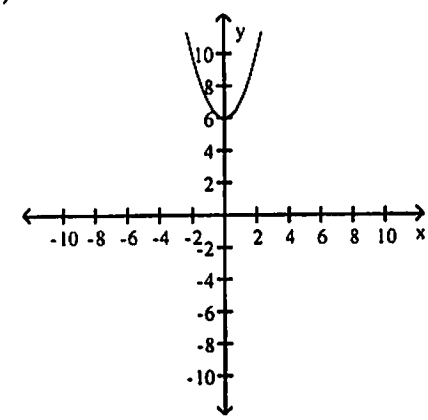
Answer the question about the given function.

13) Given the function $f(x) = -3x^2 + 6x - 1$, is the point (2, -7) on the graph of f?

14) Given the function $f(x) = \dfrac{x^2 + 5}{x - 7}$, what is the domain of f?

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

15)

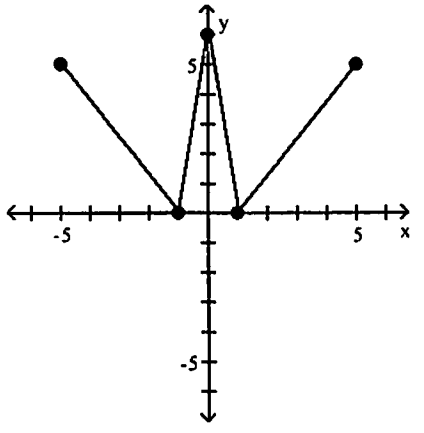


Determine algebraically whether the function is even, odd, or neither.

16) $f(x) = 9x^3 + 3$

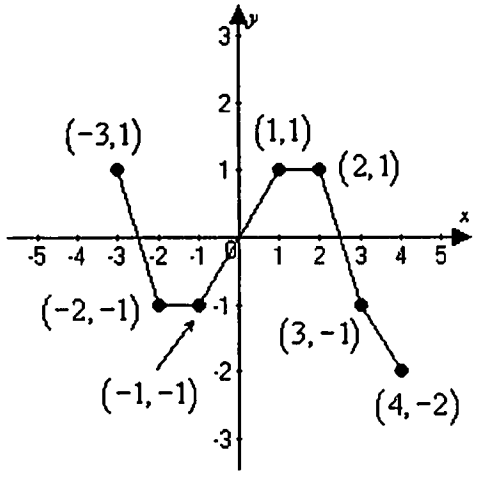
The graph of a function is given. Determine whether the function is increasing, decreasing, or constant on the given interval.

17) (0, 1)



Use the graph to find the intervals on which it is increasing, decreasing, or constant.

18)

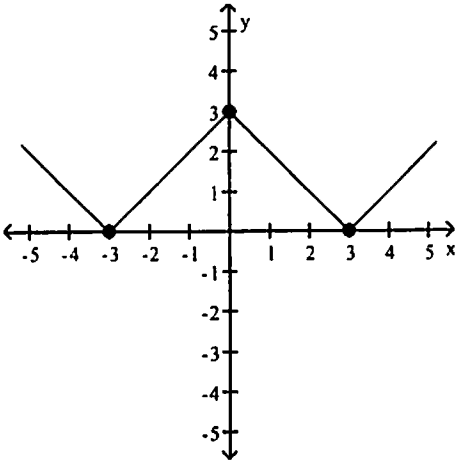


Determine algebraically whether the function is even, odd, or neither.

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

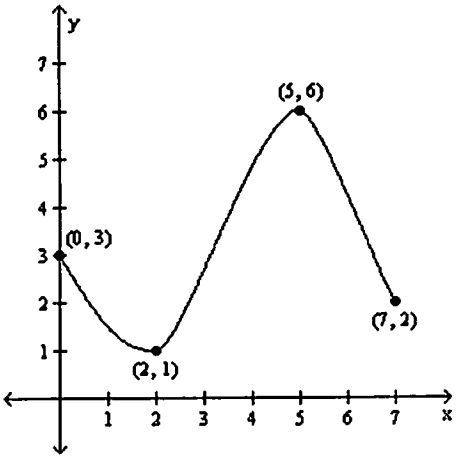
The graph of a function f is given. Use the graph to answer the question.

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



For the graph of the function y = f(x), find the absolute maximum and the absolute minimum, if it exists.

21)



Find the domain of the function.

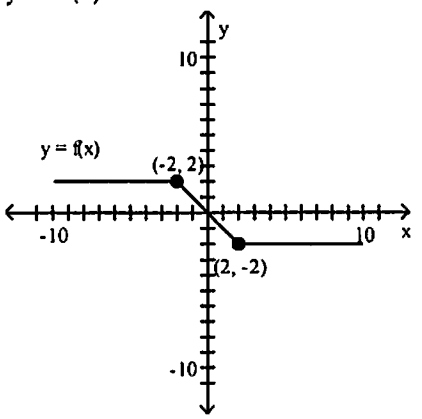
22) $h(x) = \dfrac{x - 2}{x^3 - 4x}$

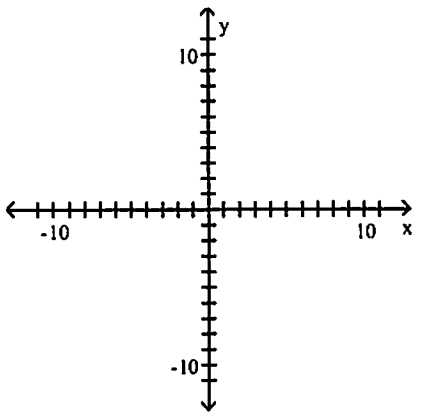
Solve.

23) John owns a hotdog stand. He has found that his profit is represented by the equation $P(x) = -x^2 + 68x + 83$, with P being profits and x the number of hotdogs sold. How many hotdogs must he sell to earn the most profit?

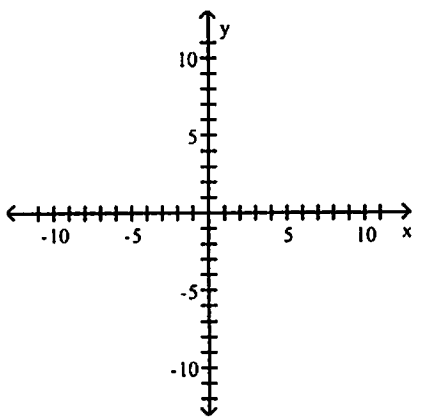
Use the accompanying graph of y = f(x) to sketch the graph of the indicated equation.

24) y = 2f(x)



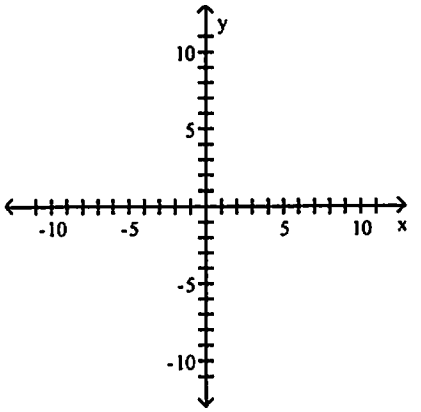


25) $y = -\frac{1}{4}f(x + 5) + 3$ given $f(x)=x^2$



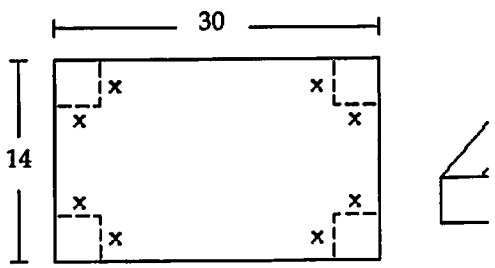
Graph the function by starting with the graph of the basic function and then using the techniques of shifting, compressing, stretching, and/or reflecting.

26) $f(x) = -2(x + 1)^2 + 4$



Solve the problem.

27) A box with an open top is to be constructed from a rectangular piece of cardboard with dimensions 14 inches by 30 inches by cutting out equal squares of side x at each corner and then folding up the sides as in the figure. Express the volume V of the box as a function of x.

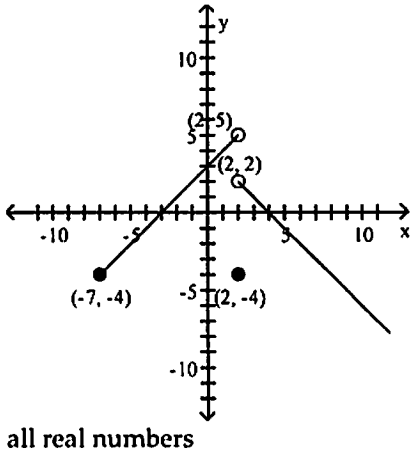


28) Elissa wants to set up a rectangular dog run in her backyard. She has 50 feet of fencing to work with and wants to use it all. If the dog run is to be x feet long, express the area of the dog run as a function of x.

Answer Key
Testname: MATH1050REVIEWCHAPTER3

1) function
domain: $\{x \mid x > 0\}$
range: all real numbers
intercept: (1, 0)
symmetry: none

2)



3) all real numbers

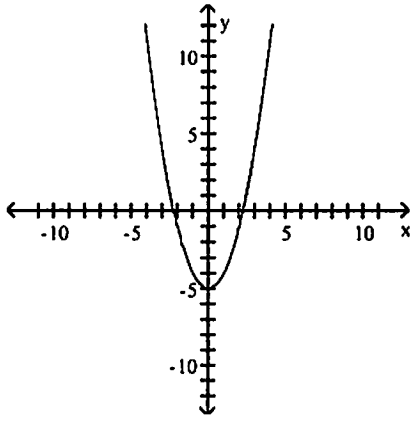
4)
$$f(x) = \begin{cases} -\frac{1}{2}x & \text{if } -4 \le x \le 0 \\ x & \text{if } 0 < x \le 3 \end{cases}$$

5) $y = |x - 9|$

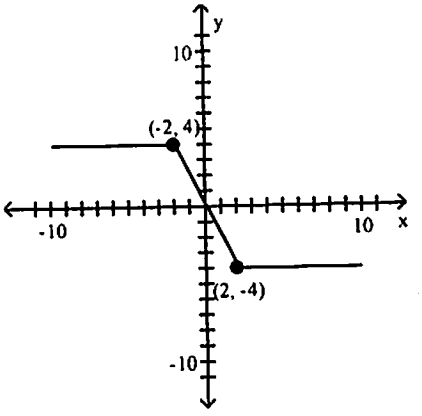
6) (0, 4)

7) 8 and 9

8)



24)



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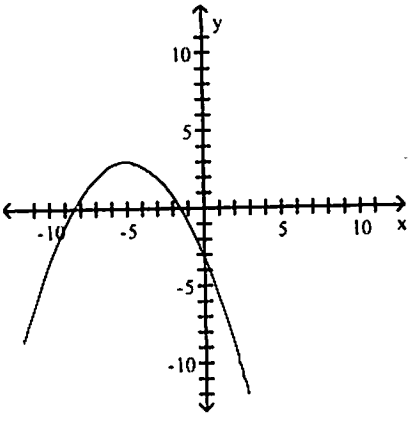

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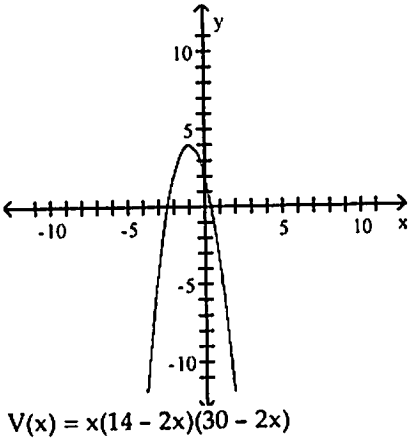
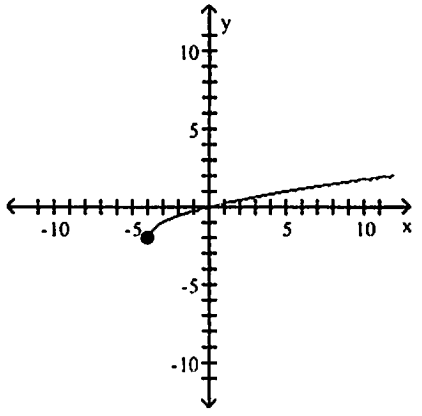


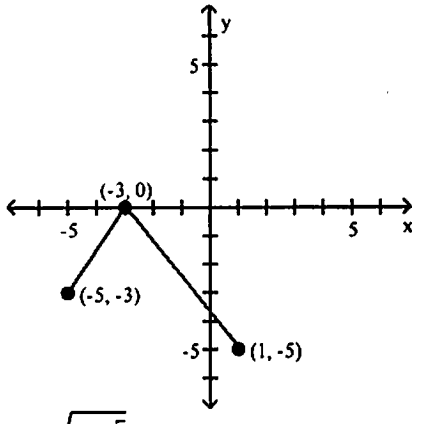
27) $V(x) = x(14 - 2x)(30 - 2x)$

28) $A(x) = 25x - x^2$

9)



10)



11) $y = \sqrt{x + 5}$
12) positive
13) No
14) $\{x \mid x \neq 7\}$
15) even
16) neither
17) decreasing
18) Decreasing on (-3, -2) and (2, 4); increasing on (-1, 1); constant on (-2, -1) and (1, 2)
19) odd
20) f has a local maximum at x = 0; the local maximum is 3
21) Absolute maximum: f(5) = 6; Absolute minimum: f(2) = 1
22) $\{x \mid x \neq -2, 0, 2\}$
23) 34 hotdogs