

Name _____

NOTE: You must show your work to receive full credit. Simply stating the answer will not suffice.

Give the domain and range of the relation.

1) $\{(-4, 18), (-3, 11), (0, 2), (3, 11), (5, 27)\}$

1) _____

Determine whether the equation defines y as a function of x.

2) $x^2 + y^2 = 1$

2) _____

Evaluate the function at the given value of the independent variable and simplify.

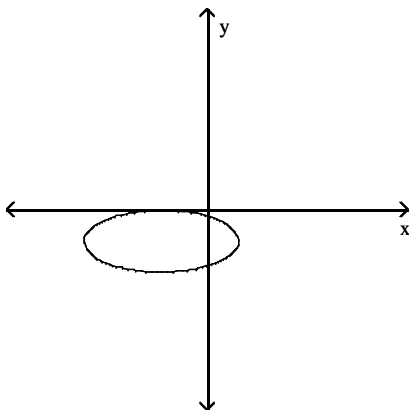
3) $f(x) = \frac{x^3 + 7}{x^2 - 2}; \quad f(-2)$

3) _____

Use the vertical line test to determine whether or not the graph is a graph in which y is a function of x.

4)

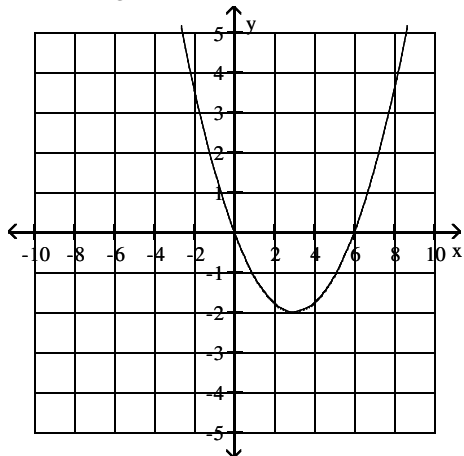
4) _____



Identify the intervals where the function is changing as requested.

5) Increasing

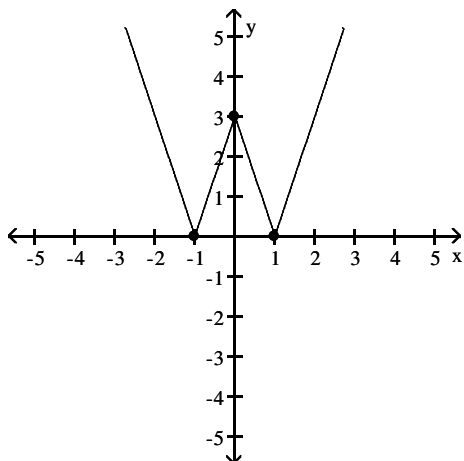
5) _____



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

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

6) _____



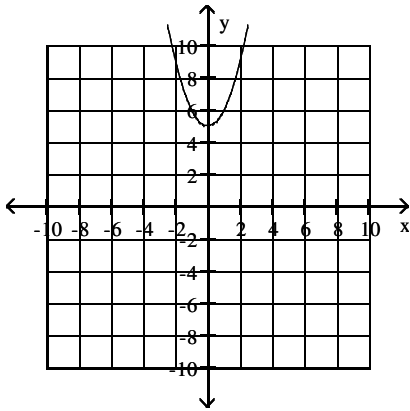
Determine whether the given function is even, odd, or neither.

7) $f(x) = x^4 - x^3$

7) _____

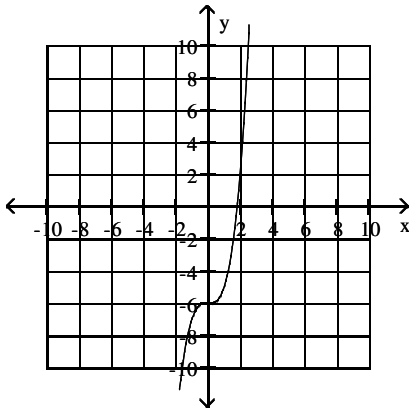
Use possible symmetry to determine whether the graph is the graph of an even function, an odd function, or a function that is neither even nor odd.

8)



8) _____

9)



9) _____

Evaluate the piecewise function at the given value of the independent variable.

$$10) f(x) = \begin{cases} 3x + 1 & \text{if } x < -1 \\ -2x - 5 & \text{if } x \geq -1 \end{cases}; f(2)$$

10) _____

Find the slope of the line that goes through the given points.

$$11) (3, -5), (-9, -8)$$

11) _____

Determine the slope and the y-intercept of the graph of the equation.

12) $7x - 10y - 70 = 0$

12) _____

Find the average rate of change of the function from x_1 to x_2 .

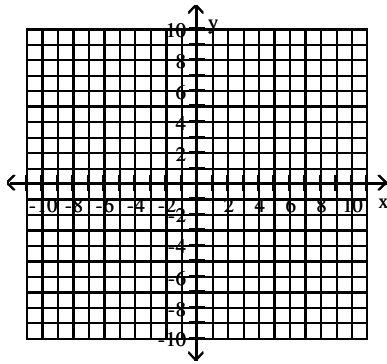
13) $f(x) = -3x^2 - x$ from $x_1 = 5$ to $x_2 = 6$

13) _____

Begin by graphing the standard quadratic function $f(x) = x^2$. Then use transformations of this graph to graph the given function.

14) $h(x) = (x - 7)^2 - 5$

14) _____



Find the domain of the function.

15) $\frac{x}{\sqrt{x-9}}$

15) _____

Given functions f and g , determine the domain of $f + g$.

16) $f(x) = 3x + 10$, $g(x) = 5x + 5$

16) _____

For the given functions f and g , find the indicated composition.

17) $f(x) = \frac{x-5}{7}$, $g(x) = 7x + 5$

17) _____

$(g \circ f)(x)$

Determine which two functions are inverses of each other.

$$18) f(x) = \frac{x-2}{3} \quad g(x) = 3x - 2 \quad h(x) = \frac{x+2}{3}$$

18) _____

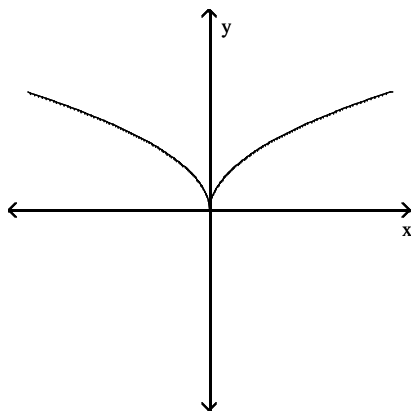
Find the inverse of the one-to-one function.

$$19) f(x) = -4x + 5$$

19) _____

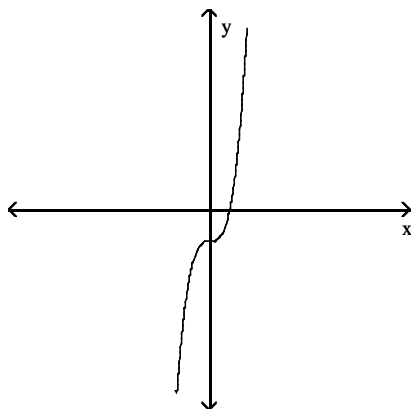
Does the graph represent a function that has an inverse function?

20)



20) _____

21)



21) _____

Answer Key

Testname: PATTERSON141REVIEW1-NO-CIRCLES

1) domain: $\{-4, -3, 0, 3, 5\}$; range: $\{18, 11, 2, 27\}$

2) y is not a function of x

3) $-\frac{1}{2}$

4) not a function

5) $(3, \infty)$

6) f has a relative maximum at $x = 0$; the relative maximum is 3

7) Neither

8) Even

9) Neither

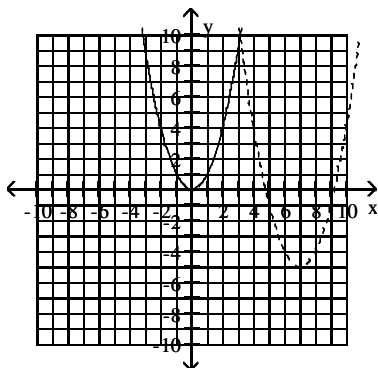
10) -9

11) $\frac{1}{4}$

12) $m = \frac{7}{10}$; $(0, -7)$

13) -34

14)



15) $(9, \infty)$

16) $(-\infty, \infty)$

17) x

18) $g(x)$ and $h(x)$

19) $f^{-1}(x) = \frac{x-5}{-4}$

20) No

21) Yes