

Question

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This is the review for Exam #1. Please work as many problems as possible before we review in-class. As always, if you need anything, please email me
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1. Question Details

SPreCalc6 1.1.005.MI. [2684203]

List the elements of the given set that are natural numbers, integers, rational numbers, and irrational numbers. (Enter your answers as comma-separated lists.)

$$\left\{0, -15, 10, 40, \frac{22}{7}, 0.538, \sqrt{7}, -\frac{1}{3}, \sqrt[3]{2}\right\}$$

- (a) natural numbers
- (b) integers
- (c) rational numbers
- (d) irrational numbers

2. Question Details

SPreCalc6 1.1.044.MI. [1615695]

Find the indicated set if given the following.

$$A = \{x|x \geq -9\} \quad B = \{x|x < 7\} \quad C = \{x|-1 < x \leq 8\}$$

- (a) $A \cap C$
- $\{x|-9 \leq x < 7\}$
 - $\{x|-9 \leq x \leq 7\}$
 - $\{x|-1 < x \leq 8\}$
 - $\{x|-1 \leq x \leq 8\}$
 - none of these
- (b) $A \cap B$
- $\{x|-9 \leq x < 7\}$
 - $\{x|-9 \leq x \leq 7\}$
 - $\{x|-1 < x \leq 8\}$
 - $\{x|-1 \leq x \leq 8\}$
 - none of these

3. Question Details

SPreCalc6 1.2.049. [1700549]

Simplify the expression and eliminate any negative exponent(s).

(a) $\frac{4a^2b^{-7}}{2a^{-6}b^4}$

(b) $\left(\frac{y}{5x^{-5}}\right)^{-2}$

4. Question Details

SPreCalc6 1.2.074. [2687510]

Simplify the expression and eliminate any negative exponent(s). Assume that all letters denote positive numbers.

(a) $\sqrt[7]{x^4y^2} \sqrt[14]{x^6y^{52}}$

(b) $\frac{\sqrt[4]{16x^3}}{\sqrt{x}}$

5. Question Details

SPreCalc6 1.3.071. [2702275]

Factor the trinomial.

$$8x^2 - 77x + 45$$

6. Question Details

SPreCalc6 1.3.073.MI. [2702210]

Factor the trinomial.

$$(5x + 1)^2 + 13(5x + 1) + 40$$

7. Question Details

SPreCalc6 1.3.076. [1701555]

Use a Special Factoring Formula to factor the expression.

$$(x + 9)^2 - 4$$

8. Question Details

SPreCalc6 1.3.077. [1701645]

Use a Special Factoring Formula to factor the expression.

$$27x^3 + y^3$$

9. Question Details

SPreCalc6 1.3.085. [1615401]

Factor the expression by grouping terms.

$$7x^3 + 6x^2 - 21x - 18$$

Find the domain of the expression.

$$\frac{1}{\sqrt{x-1}}$$

- $x \geq 1$
- $x > 1$
- $x \leq 0$
- all real numbers
- $x < 1$

Perform the addition or subtraction and simplify.

$$\frac{1}{x+6} + \frac{6}{x-3}$$

The given equation is either linear or equivalent to a linear equation. Solve the equation. (If there is no solution, enter NO SOLUTION. If all real numbers are solutions, enter REALS.)

$$\frac{1}{x-1} + \frac{4}{x+1} = \frac{4}{x^2-1}$$

$x =$

Solve the equation by factoring. (Enter your answers as a comma-separated list.)

$$6x(x-1) = 6 - 11x$$

$x =$

Evaluate the function at the indicated values. (If an answer is undefined, enter UNDEFINED.)

$$f(x) = x^2 - 6$$

$$f(-3) =$$

$$f(3) =$$

$$f(0) =$$

$$f\left(\frac{1}{2}\right) =$$

$$f(10) =$$

Evaluate the function at the indicated values. (If an answer is undefined, enter UNDEFINED.)

$$f(x) = 6x^2 + 4x - 12$$

$$f(0) =$$

$$f(2) =$$

$$f(-2) =$$

$$f(\sqrt{2}) =$$

$$f(x+1) =$$

$$f(-x) =$$

Evaluate the piecewise defined function at the indicated values.

$$f(x) = \begin{cases} x^2 & \text{if } x < 0 \\ x + 1 & \text{if } x \geq 0 \end{cases}$$

$f(-2) = \text{[]}$

$f(-1) = \text{[]}$

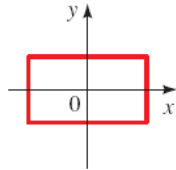
$f(0) = \text{[]}$

$f(1) = \text{[]}$

$f(2) = \text{[]}$

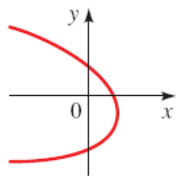
Use the Vertical Line Test to determine whether the curve is the graph of a function of x .

(a)



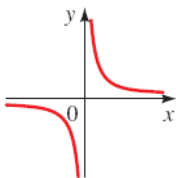
- is a function
- is not a function

(b)



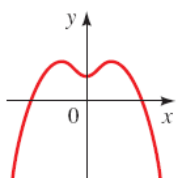
- is a function
- is not a function

(c)



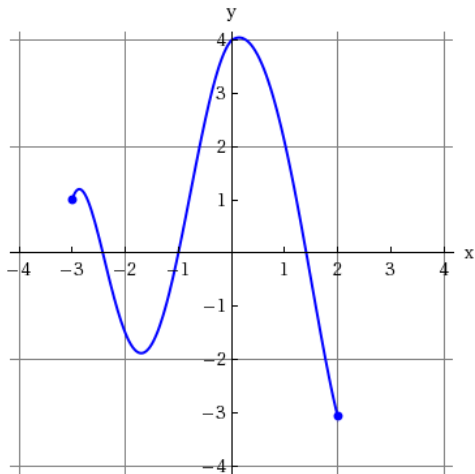
- is a function
- is not a function

(d)



- is a function
- is not a function

Consider the following graph.



Use the Vertical Line Test to determine whether the curve is the graph of a function of x .

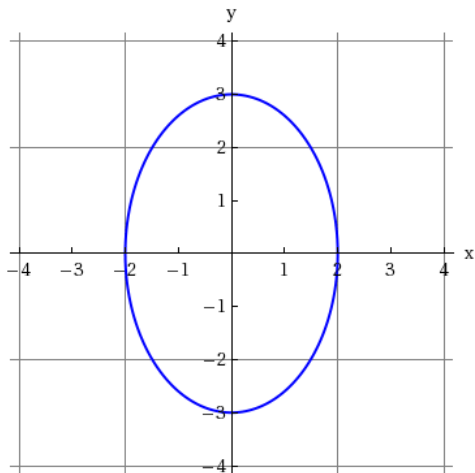
- Yes, the curve is a function of x .
- No, the curve is not a function of x .

If the curve is a function, state the domain and range. (Enter your answers using interval notation. If the curve is not a function enter NONE.)

domain

range

Consider the following graph.



Use the Vertical Line Test to determine whether the curve is the graph of a function of x .

- Yes, the curve is a function of x .
- No, the curve is not a function of x .

If the curve is a function, state the domain and range. (Enter your answers using interval notation. If the curve is not a function enter NONE.)

domain

range

Determine whether the equation defines y as a function of x . (See Example 9.)

$$x^2 + (y - 8)^2 = 3$$

- is a function
- is not a function

Determine whether the equation defines y as a function of x . (See Example 9.)

$$x^2y + y = 2$$

- is a function
- is not a function

Fill in the blank with the appropriate axis (x -axis or y -axis).

(a) The graph of $y = -f(x)$ is obtained from the graph of $y = f(x)$ by reflecting in the .

(b) The graph of $y = f(-x)$ is obtained from the graph of $y = f(x)$ by reflecting in the .

Suppose the graph of f is given. Describe how the graph of each function can be obtained from the graph of f .

(a) $y = 2f(x + 9) - 8$

- shift left 9 units, stretch vertically by a factor of 2, then shift down 8 units
- shift left 9 units, stretch horizontally by a factor of 2, then shift down 8 units
- shift right 9 units, stretch horizontally by a factor of 2, then shift down 8 units
- shift right 9 units, stretch horizontally by a factor of 2, then shift up 8 units
- shift left 9 units, stretch vertically by a factor of 2, then shift up 8 units

(b) $y = 2f(x - 9) + 8$

- shift right 9 units, stretch horizontally by a factor of 2, then shift up 8 units
- shift right 9 units, stretch vertically by a factor of 2, then shift up 8 units
- shift left 9 units, stretch horizontally by a factor of 2, then shift up 8 units
- shift left 9 units, stretch horizontally by a factor of 2, then shift down 8 units
- shift right 9 units, stretch vertically by a factor of 2, then shift down 8 units

Suppose the graph of f is given. Describe how the graph of each function can be obtained from the graph of f .

(a) $y = 2 - 7f(x)$

- stretch vertically by a factor of 7, reflect about the x -axis, then shift down 2 units
- stretch vertically by a factor of 7 then shift down 2 units
- stretch horizontally by a factor of 7, reflect about the x -axis, then shift up 2 units
- stretch vertically by a factor of 7, reflect about the y -axis, then shift up 2 units
- stretch vertically by a factor of 7, reflect about the x -axis, then shift up 2 units

(b) $y = 7 - f(-x)$

- shift up 7 units, reflect about the x -axis, then reflect about the y -axis
- reflect about the x -axis, reflect about the y -axis, then shift right 7 units
- reflect about the x -axis, reflect about the y -axis, then shift up 2 units
- reflect about the x -axis, reflect about the y -axis, then shift up 7 units
- reflect about the x -axis, then shift up 7 units

True or false?

(a) If f has an inverse, then $f^{-1}(x)$ is the same as $\frac{1}{f(x)}$.

- True
- False

(b) If f has an inverse, then $f^{-1}(f(x)) = x$.

- True
- False

A function f is given, and the indicated transformations are applied to its graph (in the given order). Write the equation for the final transformed graph.

$f(x) = \sqrt[4]{x}$; reflect in the y -axis and shift upward 5 units

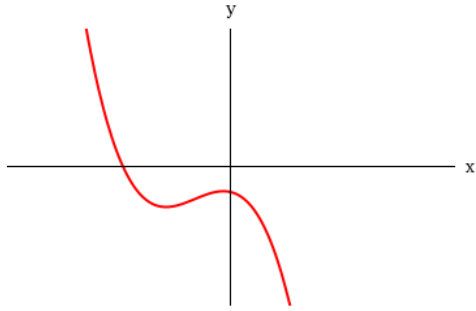
$y =$

A function f is given, and the indicated transformations are applied to its graph (in the given order). Write the equation for the final transformed graph.

$f(x) = x^2$; shift 3 units to the left and reflect in the x -axis

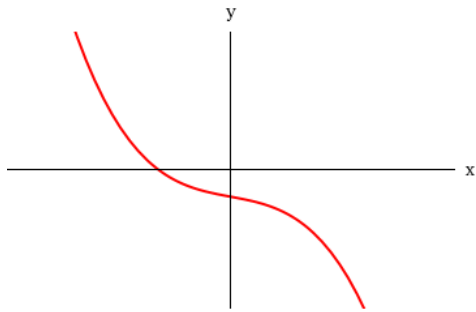
$y =$

The graph of a function f is given. Determine whether f is one-to-one.



- is one-to-one
- is not one-to-one

The graph of a function f is given. Determine whether f is one-to-one.



- is one-to-one
- is not one-to-one

Determine whether the function is one-to-one.

$$h(x) = x^2 - 3x$$

- is one-to-one
- is not one-to-one

Determine whether the function is one-to-one.

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

- is one-to-one
- is not one-to-one