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URL: <http://www.mathwarehouse.com/algebra/relation/one-to-one-function.php>

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Part I. Classify

1) Which functions below are one to one ?

Function #1 { (2,27), (3,28), (4,29), (5,30) }

Function #2 { (11,14), (12,14), (16,7), (18,13) }

Function #3 { (3,12), (4,13), (6,14), (8,1) }

2) Which functions below are one to one ?

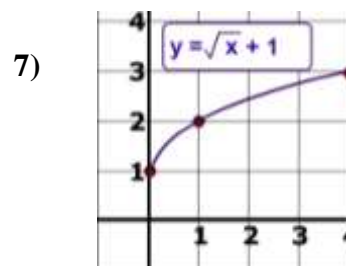
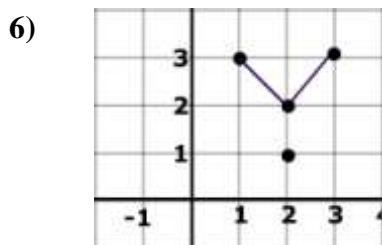
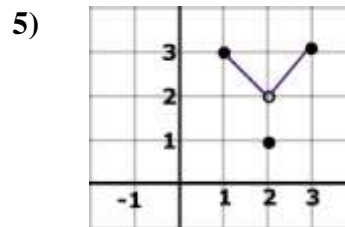
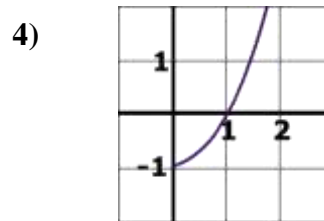
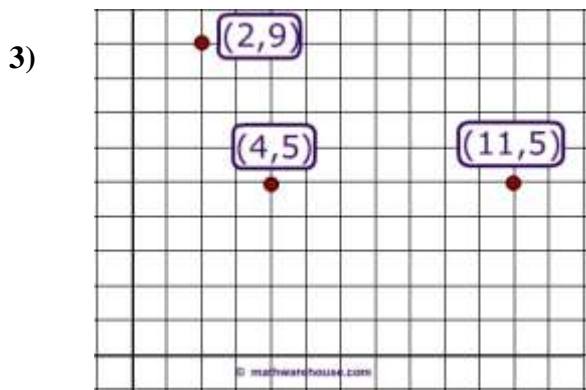
Function #1 { (2,1), (4,5), (6,7), (8,9) }

Function #2 { (3,4), (8,5), (6,7), (22,4) }

Function #3 { (-3,4), (21,-5), (0,0), (8,9) }

Function #4 { (9, 19), (34,5), (6,17), (8,19) }

Directions: Determine if the relations below are functions, one-to-one functions or neither



Part II.

1) Is the function below one-to-one?

$$\{ (\text{Ⓜ}, \text{🏠}), (\text{🏠}, \text{🚗}), (\text{🚗}, \text{🚲}), (\text{?, 🍷}), (\text{🚲}, \text{🚗}), (\text{🏭}, \text{🏭}), (\text{🏠}, \text{🏠}) \}$$

2) For the following function to be one-to-one, X can not be what values?

$$\{ (8, 11), (34, 5), (6, 17), (12, X) \}$$

3) For the following function to be one-to-one, X can not be what values?

$$\{ (21, 22), (22, 15), (111, 113), (12, X) \}$$

Directions: Determine if the relations below are functions, one-to-one functions or neither

4) $y = -2x + 4$

5) $y + x = 2$

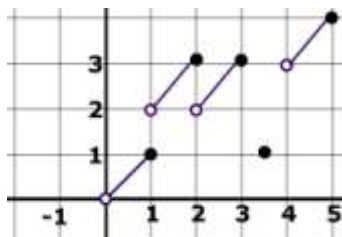
6) $y = |x|$

7) $\{ (1, 2), (2, 3), (3, 4), (5, 6), (7, 8) \}$

8) $\frac{y}{x} = 1$

9) $x = y^2 + 5$

10)



Part III

Classify the equations below as functions, one to one functions or neither

1) $y = |x + 1|$

2) $x = 5$

3) $y = \sqrt{x+2}$

4) $3x^2 + 4y^2 = 121$

5) $3x^2 + 3y^2 = 121$

6) $x = y^2 + 1$

Group Members:

Activity

Task #1) Make up a function that is **not** one to one has at least 6 ordered pairs.

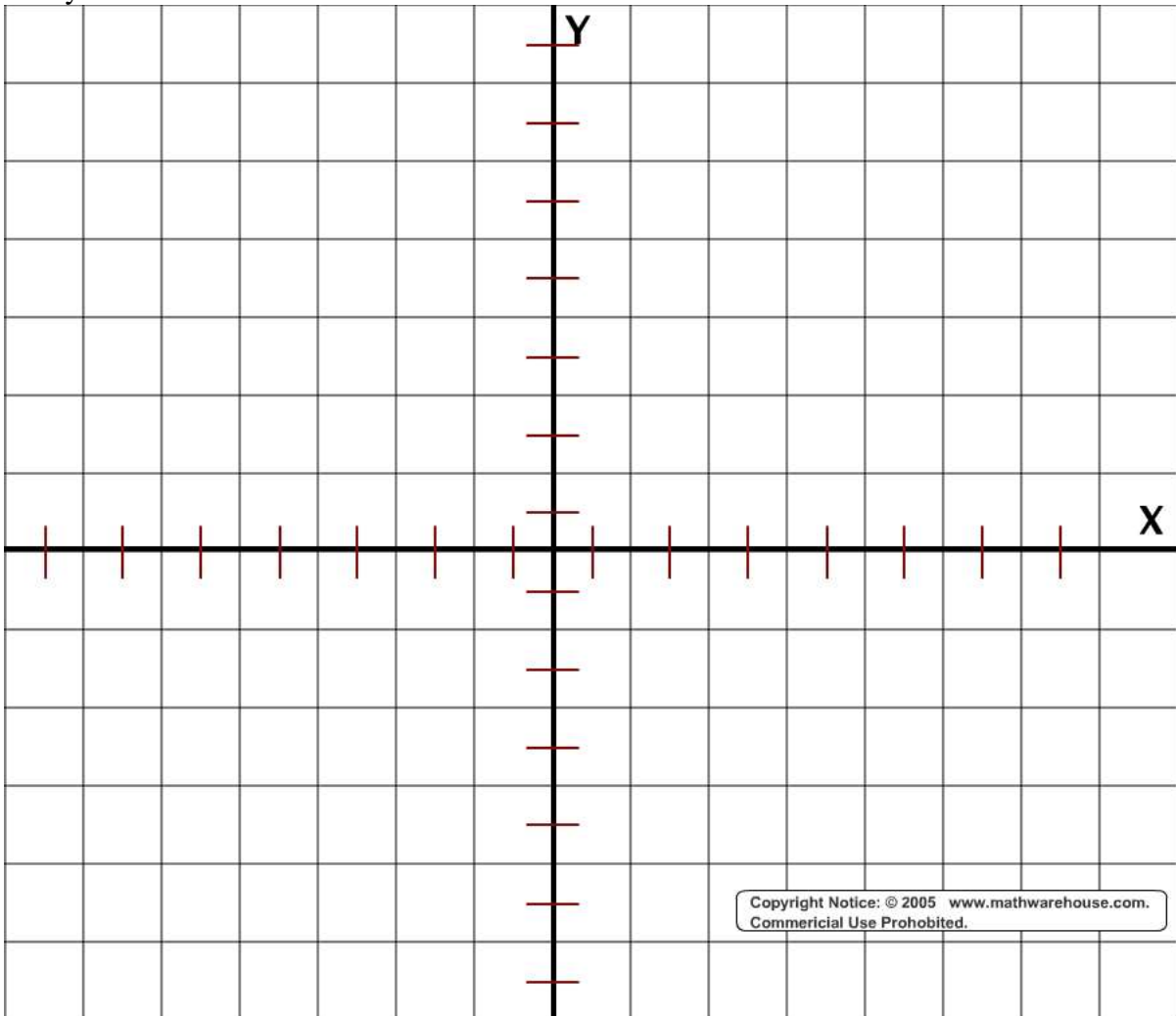
Function that is not one-to-one:

Task #2) Make up a function that is one to one has at least 6 ordered pairs.

Function that is one-to-one:

Task #3) Using two different colors, plot the two relations that you made up.

Task #4) Perform the Vertical Line and Horizontal Line Tests on both graphs and explain how you know which function is one-to-one.



Answer Key

(all answers are explained in greater depth with visual aides here

<http://www.mathwarehouse.com/algebra/relation/one-to-one-function.php>)

Part I

- 1) Relation #1 and Relation #3 are both one-to-one functions.
- 2) Relation #1 and Relation #3 are both one-to-one functions.
- 3) This graph represents a function ((4,5) and (11,5) do not pass horizontal line test so it is not a 1 to 1 function)
- 4) 1 to 1 function
- 5) function (not 1 to 1)
- 6) relation
- 7) 1 to 1 function

Part II

- 1) 1 to 1 function
- 2) X cannot be 11, 5, or 17.
- 3) X cannot be 22, 15, or 113.
- 4) 1 to 1 function (all linear equations are 1 to 1)
- 5) 1 to 1 function
- 6) function
- 7) 1 to 1 function
- 8) 1 to 1 function
- 9) function
- 10) 1 to 1 function

Part III

- 1) function
- 2) relation
- 3) 1 to 1 function.
- 4) relation
- 5) relation
- 6) function