

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

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Is the following relation a function ?

$(2,9), (4,5), (11,5)$

### Model Problems

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 ?

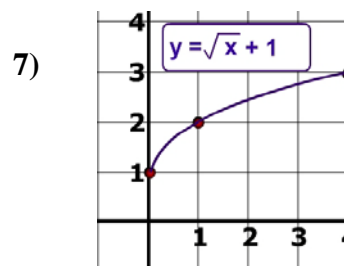
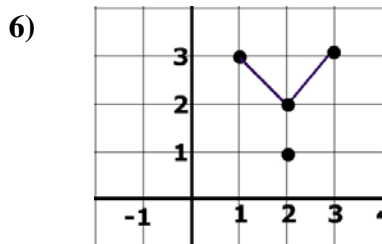
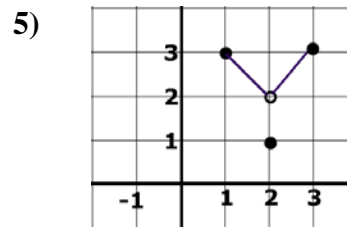
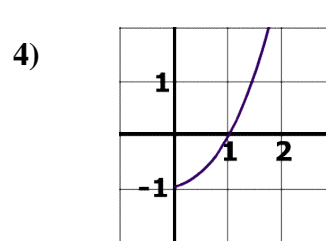
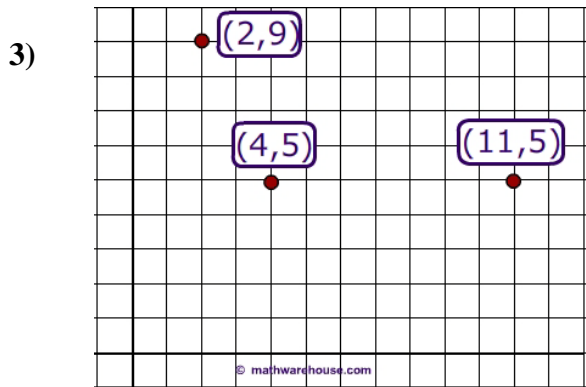
Function #1 {  $(2,1), (4,5), (6,7), (8,9)$  }

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

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

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

### The horizontal Line Test



**Class Practice**

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?

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

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

4)  $y = -2x + 4$

5)  $y + x = 2$

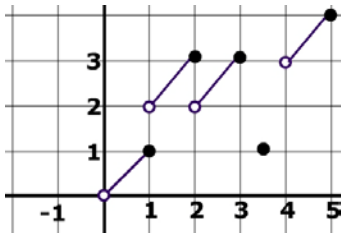
6)  $y = |x|$

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

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

9)  $x = y^2 + 5$

10)



**Group Members:**

**Activity**

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

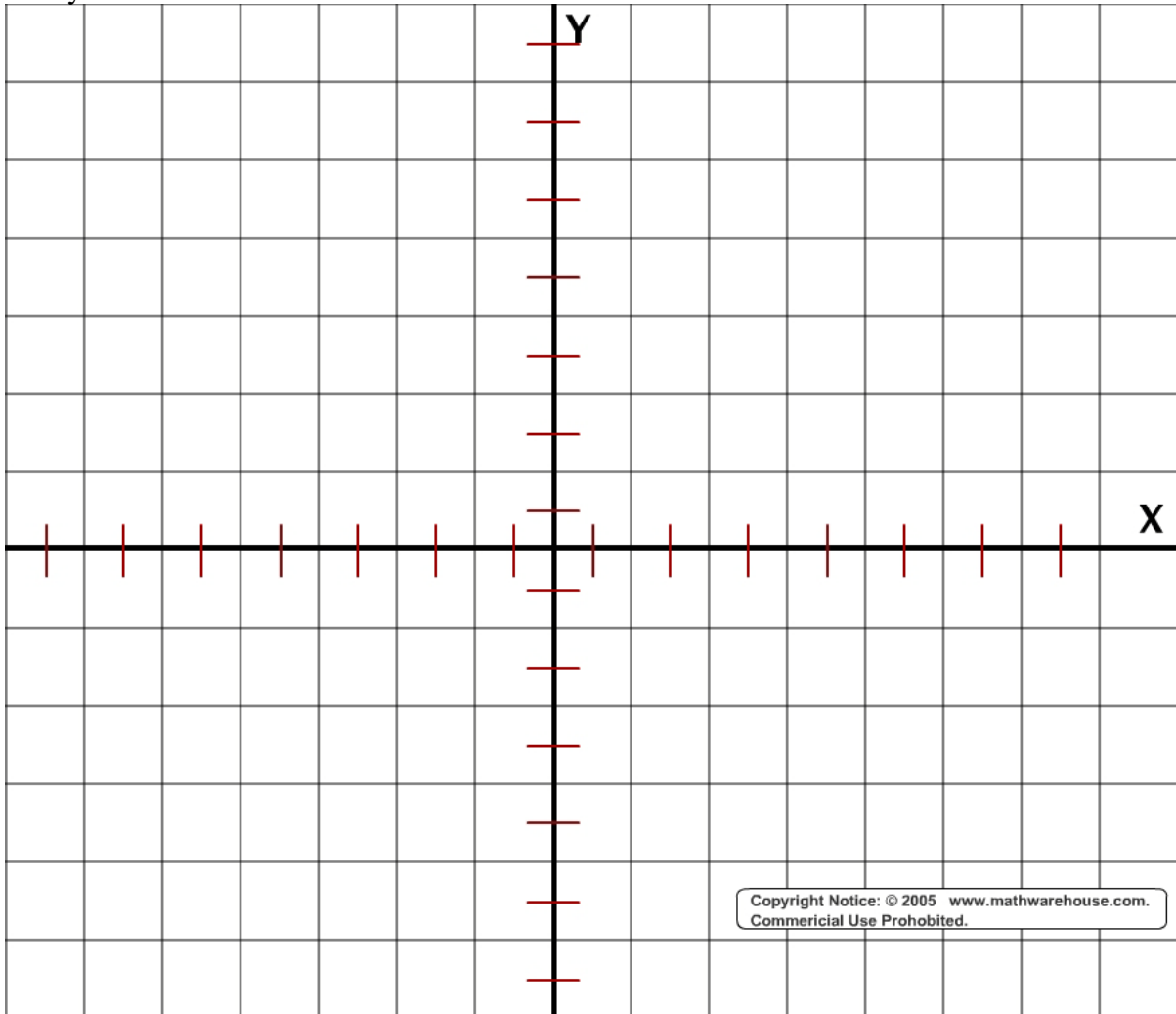
**Function that is not one-to-one:**

**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.



**Homework**

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