PENANG SANGAM HIGH SCHOOL
P.O.BOX 44, RAKIRAKI

LESSON NOTES week 7

Year/Level: 12 **Subject:** Mathematics

Strand	3
Sub Strand	3.1.1
Content Learning Outcome	Students should be able to: • find the inverse of relations. • Identify the different relations as functions. • State the domain and range of relations

Lesson Notes

Steps to find inverse functions

1. **Ordered Pair:** To find inverse: simply change positions of x and y, eg, Given $R = \{(3,2),(0,1)\}$ then $R^{-1} = \{(2,3),(1,0)\}$

2. **Equation:** To find inverse: interchange x and y variable and make new y the subject.

$$y = x + 2$$

$$x = y + 2$$

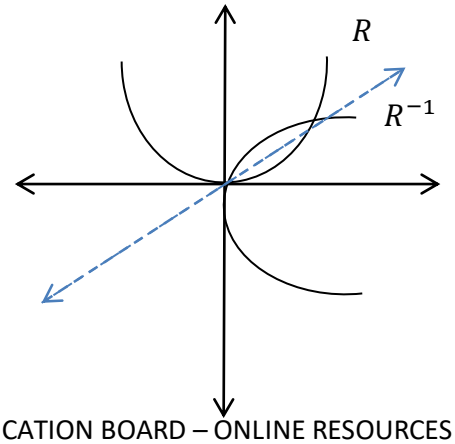
$$x - 2 = y + 2 - 2$$

$$\therefore y^{-1} = x - 2$$

3. Arrow Diagrams: To find inverse: simply change the arrow direction

Example: $R: 0 \to 1$ $R^{-1}: 1 \to 0$

4. Graph: To find its inverse, reflect the graph in the line $y = x$. Example Given $R \to y = x^2$, sketch its R^{-1}

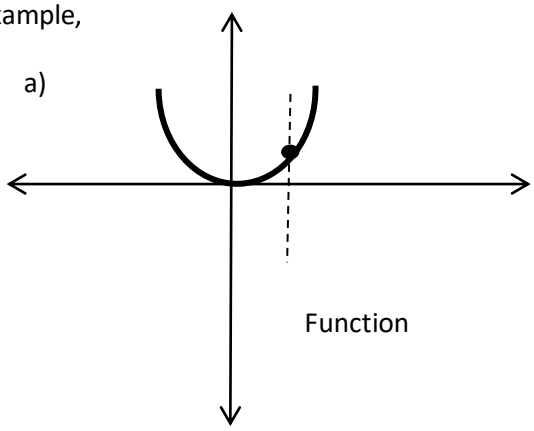


Function is where the domain or [x values/first element] is not repeated.

•For graphs, use a vertical line test, i.e. when drawing a vertical line through the graph, the line should cut the graph at only one point. Then it will be a Function, otherwise it's Not Function.

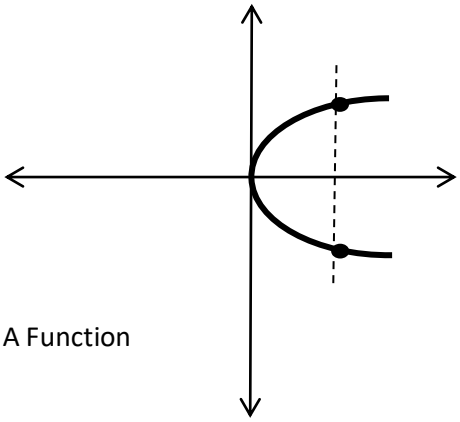
Example,

a)



Function

b)



Not A Function

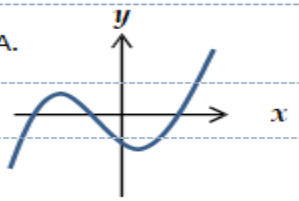
Note: **Domain**: First element which are the x values.

Range: Second element which are the y values.

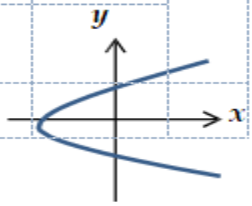
Activity (Exercise 27: page 89)

1. Which of the following is not function?

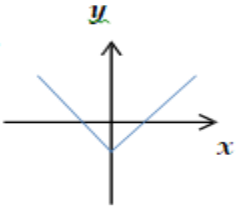
A.



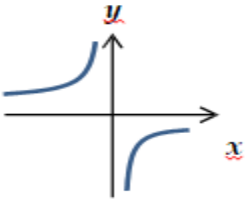
B.



C.



D.



[Questions requiring working]

2. The domain of a relation is given as $\{x : 3 \leq x < 7, x \quad R\}$.
What is the range of the inverse relation?

3. A relation is given by $(x, 2x)$ where x { 2, 1,0,1,2}
i). List the range
ii). List the relation as a set of ordered pairs.
ii). Write the domain of inverse relation.