

# Lesson 2.14

Name \_\_\_\_\_  
Alternate Definition

Pre-Calculus

## Equivalent Equation.

Determine an alternate definition for the following and graph.

1.  $(\sqrt{2-x})^2 =$

- ① Set = 0
- ② Solve for x, to locate the vertex
- ③ Test for values to determine location of graph (+ or -).

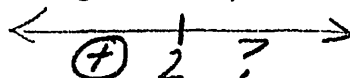
$$(\sqrt{2-x})^2 = 0$$

$$2-x = 0$$

$$-x = -2$$

$$x = 2$$

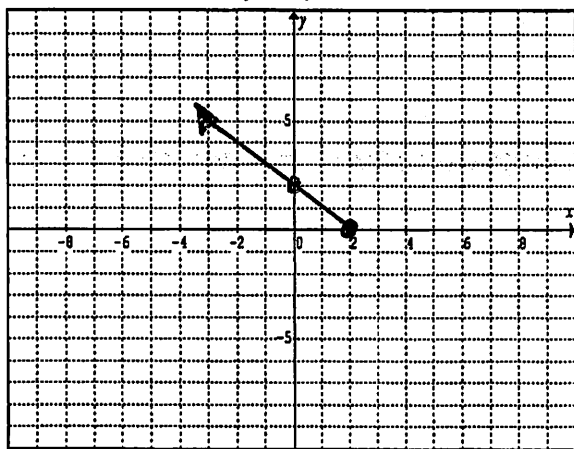
0? 10?



$$(\sqrt{2-0})^2 = (\sqrt{2-10})^2$$

$$(\sqrt{2-8})^2$$

? 2 < 2 ?



$$f(x) = 2-x \text{ for } x \leq 2$$

Note: There is a restricted Domain here. There will never be negative values. This is the alternate definition or equivalent equation.

Same or Different?

2.

$$\sqrt{(2x-3)^2} \Rightarrow (\sqrt{(2x-3)^2})^2 = (0)^2$$

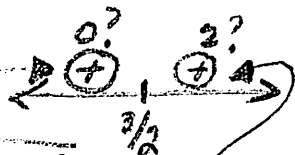
$$(2x-3)^2 = 0$$

$$(2x-3)(2x-3) = 0$$

$$2x-3=0 \quad 2x-3=0$$

$$2x=3 \quad 2x=3$$

$$x=3/2 \quad x=3/2$$



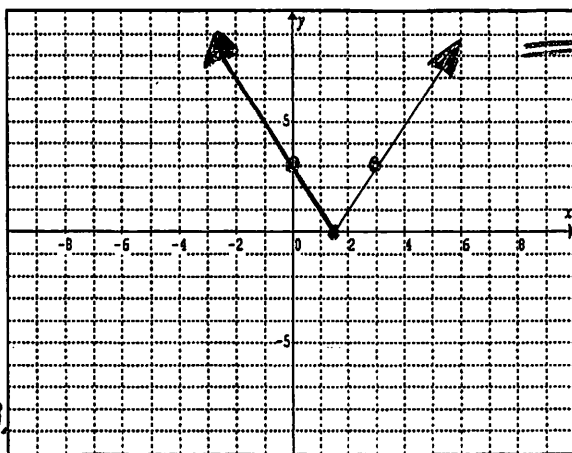
$$\sqrt{(2(0)-3)^2}$$

$$\sqrt{9} = 3$$

$$\frac{\sqrt{(2(1)-3)^2}}{\sqrt{(-1)^2}}$$

$$\frac{\sqrt{1}}{\sqrt{1}}$$

The x-value is  $(x)^2$  so the outcome is always (+)



What would be an alternate definition or equivalent equation?

$$y = |2x-3|$$

Note: No Restriction on the Domain  
D: All Real #s

### Summary

$y = (\sqrt{x})^2$  is  $y = x$  where  $x \geq 0$  (Restricted Domain)

$y = \sqrt{(x)^2}$  is  $y = |x|$  & No Restriction on Domains