

Give the Domain of each function

$$f(x) = \frac{4}{x-2}$$

$x-2 \neq 0$ then $x \neq 2$
 Domain: $(-\infty, 2) \cup (2, \infty)$

$$g(t) = \sqrt{t}$$

$t \geq 0$
 Domain: $[0, \infty)$

$$h(s) = \sqrt{s-4}$$

$s-4 \geq 0$ then $s \geq 4$
 Domain: $[4, \infty)$

Show that 2 is a zero of the function $f(x) = 3x^2 - 12$

$$f(2) = 3(2)^2 - 12 = 3(4) - 12 = 12 - 12 = 0$$

What is another zero?

$$3x^2 - 12 = 0 \text{ then } 3x^2 = 12 \text{ then } x^2 = 4 \text{ then } x = \pm 2$$

$$\text{Therefore } f(-2) = 3(-2)^2 - 12 = 3(4) - 12 = 12 - 12 = 0$$

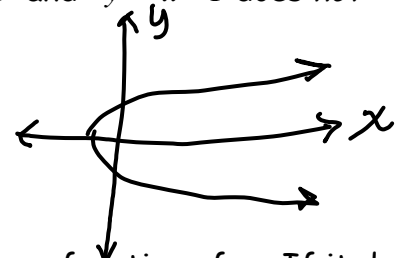
Find the range of the function. **Since the parabola opens up with a vertex at $(0, -12)$**

Range $[-12, \infty)$

Which of the relations described by the two equations $x^2 - y = 1$ and $y^2 - x = 1$ does not describe y as a function of x ? Explain.

$y^2 - x = 1$ for every x value there are two y values

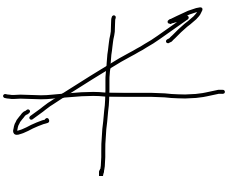
The graph does not pass the vertical line test



Tell whether the relation described by each equation defines y as a function of x . If it does sketch the graph.

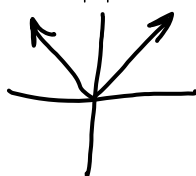
$$y = 2x + 5$$

yes



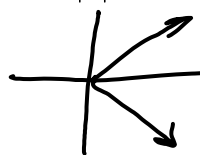
$$y = |x|$$

yes



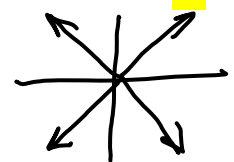
$$x = |y|$$

no

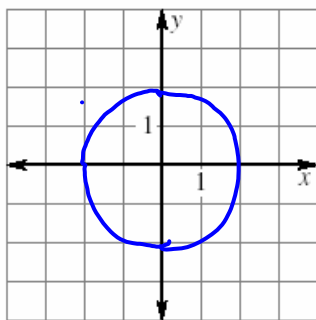


$$y^2 = x^2$$

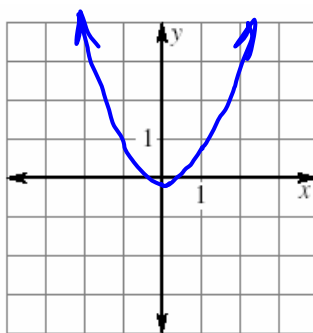
no



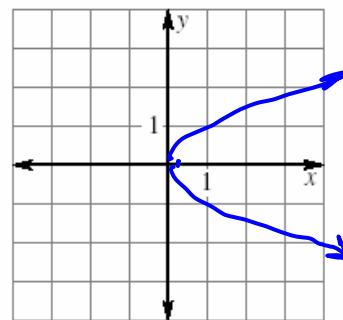
Tell whether the graph of each relation is the graph of a function.



No



Yes



No

Objective: To identify a function, to determine the domain, range, and zeros of a function, and to graph the function.

Function - a rule that assigns every element in the domain to exactly one element in the range

Domain - the set of values for which a function is defined (usually x values)

Range - the set of output values of a function (usually y values)

Dependent Variable - (the y value), the variable that represents the outputs or the range

Independent Variable - (the x value) the variable that represents the inputs or the domain.

Vertical-Line Test - if there is a vertical line that intersects your graph more than once, then the graph is not a function

Give the Domain of each function

$$g(x) = \frac{1}{x-7} \quad x-7 \neq 0 \text{ then } x \neq 7$$

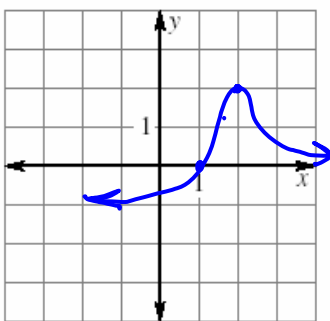
Domain: $(-\infty, 7) \cup (7, \infty)$

$$h(r) = \sqrt{1-r^2} \quad 1-r^2 \geq 0 \text{ then } r^2 \leq 1$$

$$-1 \leq r \leq 1$$

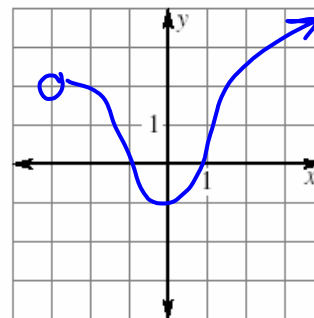
Domain: $[-1, 1]$

Use the graph to give the domain, range, and zeros of each function.



Domain: $(-\infty, \infty)$ Range: $(-1, 2]$

Zeros: 1



Domain: $(-3, \infty)$ Range: $[-1, \infty)$

Zeros: -1, 1