

Functions and Relations

one-to-one function

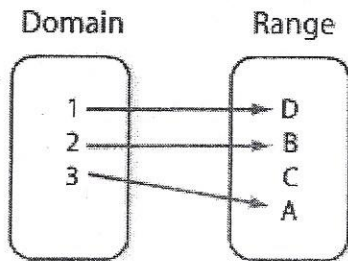
Each element of the domain pairs to exactly one unique element of the range.

Function: Each element of the domain pairs with one element of the range.

*one-to-one is a special type of function

Domain: set of all x-values

Range: set of all y-values



State the domain and range of the relation. Then determine whether it is a function.

$\{(-6, -1), (-5, -9), (-3, -7), (-1, 7), (6, -9)\}$

$D: \{-6, -5, -3, -1, 6\}$

Yes it is a function.

$R: \{-9, -7, -1, 7\}$

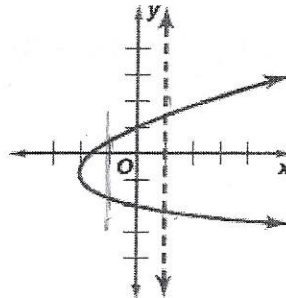
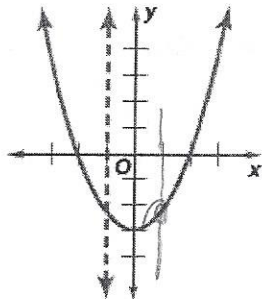
Key Concept Vertical Line Test

Words

If no vertical line intersects a graph in more than one point, the graph represents a function.

If a vertical line intersects a graph in two or more points, the graph does not represent a function.

Models



Evaluating a Function

Given $f(x) = 2x^2 - 8$, find each value.

$$\begin{aligned} f(6): & 2(6)^2 - 8 \\ & = 2(36) - 8 \\ & = 72 - 8 \\ & = \boxed{64} \end{aligned}$$

$$\begin{aligned} f(2x): & \\ & 2(2x)^2 - 8 \\ & = 2(4x^2) - 8 \\ & = \boxed{8x^2 - 8} \end{aligned}$$

Given $g(x) = 0.5x^2 - 5x + 3.5$, find each value.

$$\begin{aligned} g(2.8): & \\ & .5(2.8)^2 - 5(2.8) + 3.5 \\ & = .5(7.84) - 14 + 3.5 \\ & = 3.92 - 14 + 3.5 \\ & = \boxed{-6.58} \end{aligned}$$

$g(4a):$

Homework: p64 1-3, 11-13, 21, 22, 24-32, 35 and the domain/range worksheet