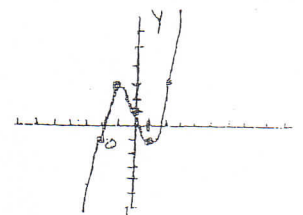


6.2 TYPES OF FUNCTIONS

Function	Type	Example	Graph of Example
$f(x) = mx + b$	linear	$f(x) = 2x + 1$	
$f(x) = b$	constant	$f(x) = 5$	
$f(x) = ax^2 + bx + c$	quadratic	$f(x) = x^2$	
$f(x) = ax^3 + bx^2 + cx + d$	Cubic	$f(x) = x^3 - 3x + 1$	
$f(x) = a_n x^n + \dots + a_2 x^2 + a_1 x + a_0$	polynomial	$f(x) = 2x^2 - x^4$	
$f(x) = \frac{P(x)}{Q(x)}$, where P and Q are polynomials	rational	$f(x) = \frac{x+1}{x-1}$	
$f(x) = \sqrt[n]{x}$	root	$f(x) = \sqrt{x}$	

Domain

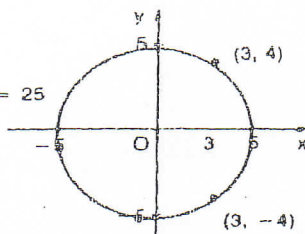


RELATIONS

know that the set of ordered pairs

$$\{(x, y) \mid x^2 + y^2 = 25\} \quad x^2 + y^2 = 25$$

represents a circle with centre the origin and radius 5. Notice from the graph that for some values of x there are two corresponding values of y .



A relation is any set of ordered pairs.
 The domain of the relation is the set of all first coordinates.
 The range is the set of all second coordinates.

EXAMPLE 1. Graph the relation $x + y \geq 0$.

Vertical Line Test

If a vertical line intersects a figure in at most one point, the figure is the graph of a function. If there is at least one vertical line which intersects the figure in more than one point, then the figure is not the graph of a function.

EXAMPLE 2. Which of the following are graphs of functions?

