

1. State whether or not each of the following is a function. [7]

a)

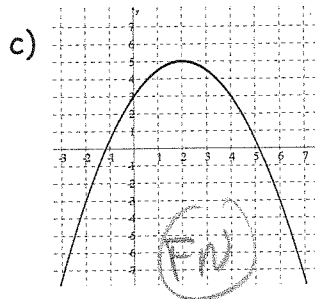
x	y
2	3
4	3
5	2
7	1

FN
FN

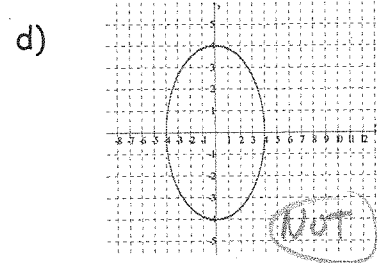
b)

x	y
1	4
1	2
2	3
3	5

NOT



FN



NOT

e) $y = 3x - 2$

FN

f) $f(x) = 5x^2 - 7x + 3$

FN

g) $y = \pm\sqrt{x-4}$

NOT

2. State the domain and range of each relation. [8]

relation	Domain	Range
$\{(2,3), (-1,4), (0,3), (3,4)\}$	$D = \{-1, 0, 2, 3\}$ ✓	$R = \{3, 4\}$ ✓
$f(x) = 2(x-5)^2 + 7$	$D = \{x \in \mathbb{R}\}$ ✓	$R = \{y \in \mathbb{R} / y \geq 7\}$ ✓
	$D = \{x \in \mathbb{R} / -6 \leq x < 4\}$ ✓	$R = \{y \in \mathbb{R} / 0 < y \leq 5\}$ ✓
$y = \sqrt{x-2}$	$D = \{x \in \mathbb{R} / x \geq 2\}$ ✓	$R = \{y \in \mathbb{R} / y \geq 0\}$ ✓

3. Given $f(x) = 2x^2 - 7x + 3$ and $g(x) = 2x - 1$, determine: [1,2,3]

a) $f(3)$

$$f(3) = 2(3)^2 - 7(3) + 3$$

$$= 18 - 21 + 3$$

$$= 0$$

b) $f(g(2))$

$$g(2) = 2(2) - 1$$

$$= 3$$

$$f(g(2)) = f(3)$$

$$= 0$$

c) x when $f(x) = 18$

$$18 = 2x^2 - 7x + 3$$

$$0 = 2x^2 - 7x - 15$$

MAN

$$-30 \quad -7 \quad \frac{-10 \pm 3}{2}$$

$$0 = (x-5)(2x+3)$$

then

$$x = 5 \text{ or } x = -\frac{3}{2}$$