Ex 1.1

Q2 (i) Yes, is a function
(ii) No, as "-2" has 2 different outputs.
(iii) Yes, is a function.

Q3 (i) Yes
(ii) No, as output 'a' has 2 diff outputs.
(iii) No " " '9' " " " "
(iv) Yes.

Q6 $g(x) = (x-2)^2$

(i) $g(4) = (4-2)^2 = 2^2 = 4.$

(ii) $g(-4) = (-4-2)^2 = -6^2 = 36$

(iii) $g(8) = (8-2)^2 = (6)^2 = 36.$

(iv) $g(a) = (a-2)^2 = a^2 - 4a + 4$

Q7 $f: R \to R : x \to 3x-4.$

$$f(k) + f(2k) = 0$$
$$(3k-4) + (3(2k)-4) = 0$$
$$3k-4+6k-4 = 0$$
$$9k-8 = 0$$
$$9k = 8$$
$$k = 8/9$$

Q9 $f(x) = 2x^2 - 1$ $\qquad g(x) = x + 2.$

(i) $f(x) = 3$

$2x^2 - 1 = 3$

$2x^2 = 4$

$x^2 = 2$

$x = \pm\sqrt{2}$

(ii) $g(x) = f(3)$

$x + 2 = 2(3)^2 - 1$

$x + 2 = 18 - 1$

$x = 15$

(iii) $f(x) = g(x)$

$2x^2 - 1 = x + 2$

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

$(2x - 3)(x + 1) = 0$

$x = 3/2 \qquad x = -1$

Q12 $g(x) = 3x - 2.$

(i) $g(-x) = 6$

$3(-x) - 2 = 6$

$-3x = 8$

$3x = -8$

$x = -8/3$

(ii) $g(2x) = 4$

$3(2x) - 2 = 4$

$6x = 6$

$x = 1$

(iii) $\frac{1}{g(x)} = 6$

$\frac{1}{3x - 2} = 6$

$1 = 6(3x - 2)$

$1 = 18x - 12$

$13 = 18x$

$13/18 = x$

Q14 (i) Yes (ii) Yes (iii) Yes

(iv) No (v) yes (vi) No

(vii) Yes (viii) Yes (ix) No.

Q15

A $\rightarrow$ 5 $(-\infty, 5]$

B $\rightarrow$ 6 $[1, \infty)$

C $\rightarrow$ 1 $(-\infty, 4)$

D $\rightarrow$ 2 $[-2, 2]$

E $\rightarrow$ 2 $[-2, 2]$

F $\rightarrow$ 4 $[0, 4]$

Q18 $f(x) = kx(x-6)$

$f(x) = k(x^2 - 6x)$

$(6,0)$ $0 = k(6^2 - 6(6))$

$0 = k(0)$

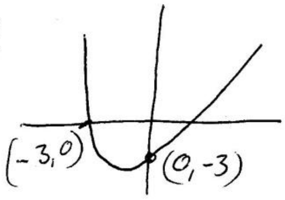
$(3,-18)$ $-18 = k(3^2 - 6(3))$

$-18 = k(9-18)$

$-18 = -9k$

$2 = k.$

Q20



(i) $f(x) = x^2 + bx + c$.

$(-3,0)$ $\quad 0 = (-3)^2 + b(-3) + c$

$0 = 9 - 3b + c$

$\boxed{3b - c = 9}$

$(0,-3)$ $\quad -3 = (0)^2 + b(0) + c$

$\boxed{-3 = c}$

(ii) $3b - c = 9 \quad , \quad c = -3$

$3b - (-3) = 9$

$3b + 3 = 9$

$3b = 6$

$b = 2$.

(iii) $x^2 + bx + c = 0$

$x^2 + 2x - 3 = 0$

$(x + 3)(x - 1) = 0$

$x = -3 \qquad x = 1$.

$\Rightarrow$ D $(1, 0)$