1)

a) $D = \{1, -3, 3, 2\}$

b) $CD = \{1, 4, 5, 9\}$

c) $I = \{1, 4, 9\}$

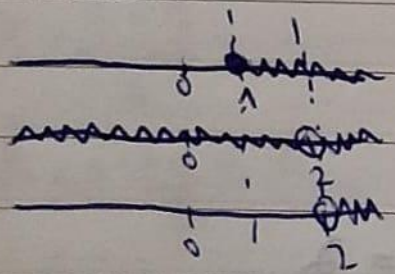
d) $F(2) = 4$

e) $\exists x \; F(x) = 9, \; x = \pm 3$

2)

a) $F(x) = \frac{x^3 + 1}{x - 9}$; $x - 4 \neq 0$ $\Rightarrow$ $x \neq 4$ $\Rightarrow$ $D = \mathbb{R} - \{4\}$

b) $F(x) = \frac{\sqrt{x-1}}{x-2}$; I) $x - 1 \geq 0$ $\Rightarrow$ $x \geq 1$ II) $x - 2 \neq 0$ $\Rightarrow$ $x \neq 2$



$D = \{x \in \mathbb{R} / x > 2\}$

c) $F(x) = x^2 + 1$

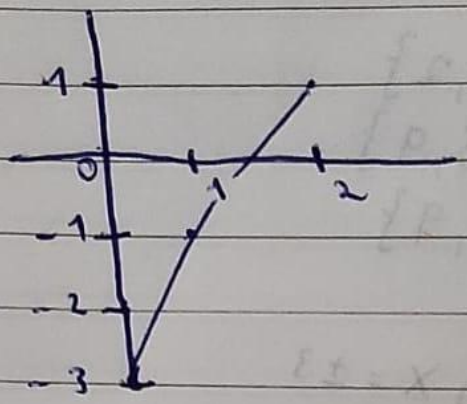
$D = \mathbb{R}$

d) $F(x) = \frac{1}{\sqrt{x+3}}$; $x + 3 > 0$ $\Rightarrow$ $x > -3$ $\Rightarrow$ $D = \{x \in \mathbb{R} / x > -3\}$

3)

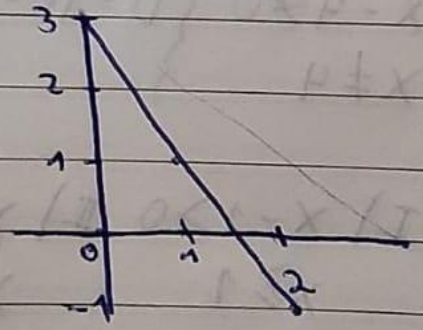
a) $F(X) = 2x - 3$

X	Y
0	-3
1	-1
2	1



b) $F(X) = -2x + 3$

X	Y
0	3
1	1
2	-1



4)

a) $b = -3$

b) $a = \frac{\Delta Y}{\Delta X} = \frac{3 - (-3)}{3 - 0} = \frac{6}{3} = 2$

c) $F(X) = 2x + (-3)$;

$F(X) = 2x - 3$

5)

a) $2x - 4 = 8 - x$

$3x = 12$;

$x = \frac{12}{3}$;

$x = 4$

b) $4x^2 - 5x = 11x$ | $\Delta = (-16)^2 - 4 \cdot 4 \cdot 0$

$4x^2 - 16x = 0$ | $\Delta = 256$

- $x = \frac{16 \pm \sqrt{256}}{2 \cdot 4}$; $x_1 = \frac{16 + 16}{4} = \frac{32}{4} = 8$

$x_2 = \frac{16 - 16}{4} = 0$

c) $x^2 - 3x - 10 = 0$ | $\Delta = (-3)^2 - 4 \cdot 1 \cdot (-10)$

$\Delta = 9 + 40$

$\Delta = 49$

$x = \frac{3 \pm 7}{2}$

$x_1 = \frac{10}{2} = 5$

$x_2 = \frac{-4}{2} = -2$