

الف) $x^2 - 2x + 1 = 0 \Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$
 ب) $x^2 - 12x + 15 = 0 \Rightarrow (x-3)(x-5) = 0 \Rightarrow x = 3, 5$
 ج) $x^2 - 4x - 12 = 0 \Rightarrow (x-6)(x+2) = 0 \Rightarrow x = 6, -2$
 د) $x^2 - 4x - 4 = 0 \Rightarrow (x-2)^2 - 8 = 0 \Rightarrow (x-2) = \pm 2\sqrt{2} \Rightarrow x = 2 \pm 2\sqrt{2}$

هـ) $x^2 - 2x > 0 \Rightarrow x(x-2) > 0 \Rightarrow x < 0 \text{ or } x > 2$
 و) $x^2 - \sqrt{3-2x} = 0 \Rightarrow x = \sqrt{3-2x} \Rightarrow x^2 = 3-2x \Rightarrow x^2 + 2x - 3 = 0 \Rightarrow (x+3)(x-1) = 0 \Rightarrow x = -3, 1$
 ز) $x^2 - 2x + 1 = 0 \Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$
 ح) $x^2 - 2x + 1 = 0 \Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$
 ط) $x^2 - 2x + 1 = 0 \Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$

ث) $\cos x = 1 \Rightarrow x = 2k\pi$
 ج) $\sin x = 1 \Rightarrow x = \frac{\pi}{2} + 2k\pi$
 د) $\cos x = -1 \Rightarrow x = \pi + 2k\pi$
 هـ) $\sin x = -1 \Rightarrow x = \frac{3\pi}{2} + 2k\pi$
 و) $\cos x = \frac{1}{2} \Rightarrow x = \pm \frac{\pi}{3} + 2k\pi$
 ز) $\sin x = \frac{1}{2} \Rightarrow x = \pm \frac{\pi}{6} + 2k\pi$
 ح) $\cos x = \frac{\sqrt{3}}{2} \Rightarrow x = \pm \frac{\pi}{6} + 2k\pi$
 ط) $\sin x = \frac{\sqrt{3}}{2} \Rightarrow x = \pm \frac{\pi}{3} + 2k\pi$

ی) $x^2 - 5x + 6 = 0 \Rightarrow (x-2)(x-3) = 0 \Rightarrow x = 2, 3$
 ک) $x^2 - 2x + 5 = 0 \Rightarrow (x-1)^2 + 4 = 0 \Rightarrow (x-1) = \pm 2i \Rightarrow x = 1 \pm 2i$
 ل) $x^2 + 4x + 5 = 0 \Rightarrow (x+2)^2 + 1 = 0 \Rightarrow (x+2) = \pm i \Rightarrow x = -2 \pm i$
 م) $x^2 - 7x + 6 = 0 \Rightarrow (x-1)(x-6) = 0 \Rightarrow x = 1, 6$

ن) $\frac{x^2 - 2x + 2}{x - 5} < 0 \Rightarrow \frac{(x-1)(x-2)}{x-5} < 0 \Rightarrow x \in (-\infty, 1) \cup (2, 5)$
 س) $\frac{x^2 - 1}{x^2 - 2x + 5} > 0 \Rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} > 0 \Rightarrow \frac{x+1}{x-5} > 0 \Rightarrow x \in (-\infty, -1) \cup (5, +\infty)$

$$\rightarrow x^5 - 1 \neq 0 \Rightarrow (x-1)(x+1) \neq 0 \Rightarrow x \neq 1 \wedge x \neq -1$$

$$\Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

$$\left\{ \begin{array}{l} x \neq 1 \\ x^2 - 11x + 21 = 0 \Rightarrow (x-5)(x-7) = 0 \Rightarrow x=5 \vee x=7 \\ \sqrt{x^2 - 3x} = 0 \Rightarrow x^2 - 3x = 0 \Rightarrow -x(x-3) \end{array} \right\} \Rightarrow p_f = (0,1) \cup (1,3]$$

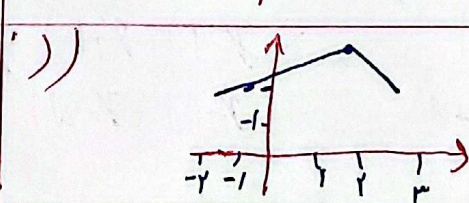
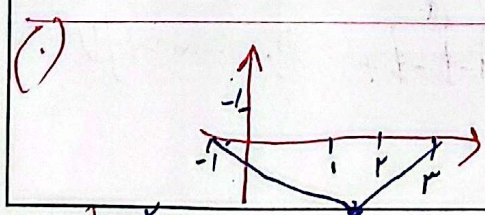
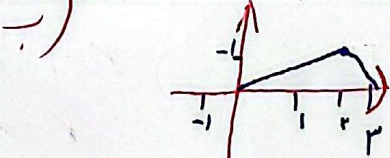
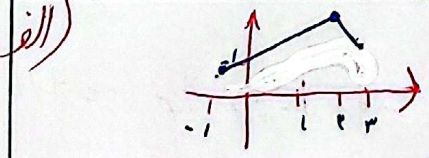
$\frac{-1}{s} \quad \frac{0^*}{s} \quad \frac{1}{s}$

→

	-1	0	1			
$x - x$	+	+	0	-	0	+
$x + x$	+	0	-	0	+	+
	+	+	-	-	0	+

$$\frac{x - f(x)}{f(x)} \geq 0 \cdot \left[\begin{array}{l} (1) x - f(x) \geq 0 \wedge f(x) > 0 \\ (2) x - f(x) \leq 0 \wedge f(x) < 0 \end{array} \right] \Rightarrow D_f = \left(-\infty, \frac{1}{e} \right) \cup [0, 1]$$

$$\begin{aligned} \text{دفعه } 1 \text{ و } 2 \text{ را با هم جمع می‌کنیم:} \\ \begin{cases} F_d + C = 0 \rightarrow C = -F_d \\ 9a + C = r \rightarrow C = r - 9a \end{cases} \Rightarrow r - 9a = -F_d \Rightarrow r = 9a \Rightarrow a = \frac{r}{9} \Rightarrow C = -\frac{1r}{9} \end{aligned}$$



$$\begin{aligned} & \text{الف) } x^3 - x^2 > 0 \\ & \Rightarrow x(x^2 - x) > 0 \Rightarrow x > 0 \text{ و } x < 0 \\ & \Rightarrow D_f = (-\infty, 0) \cup (2, \infty) \end{aligned}$$

$$D_f = \{(-4, -3) \cup (-2, -1) \cup (2, 3) \cup (4, 5)\}$$