

الف) $\frac{(x-2)(x-3)(x-4) \cdot 0}{x^2} = -\frac{2}{x} + \frac{3}{x} - \frac{4}{x} +$

ب) $\frac{(x-2)(x-3)(x-4)(x-5)}{x^2} = \frac{2}{x} - \frac{3}{x} - \frac{4}{x} +$

الف) $-\frac{2}{x} + \frac{3}{x} - \frac{4}{x} +$

ب) $+\frac{2}{x} - \frac{3}{x} - \frac{4}{x} +$

الف) $\frac{x^3 - x^2 + x}{x^2} \geq 0 \quad x-1 \neq 0 \quad \frac{x(x^2-1)+x}{x^2} \Rightarrow \frac{x(x-1)(x+1)+x}{x^2} = \frac{0}{x} - \frac{1}{x} + \frac{1}{x} +$

ب) $\frac{(x-2)(x-1)}{(x-3)(x-1)} = +\frac{2}{x} + \frac{1}{x} - \frac{3}{x} +$

الف) $x^2(x-1) = \frac{x^2(x-1)(x+1)}{x^2+x+1} \quad x^2+x+1 > 0 \quad \Delta = 1^2 - 4 = -3 < 0 \quad x \in \mathbb{R}$
 $-\frac{1}{x} - \frac{0}{x} + \frac{1}{x} + \quad (-\infty -1) \cup (1 + \infty) \cup [1] \cup [0] \cup [-1]$

ب) $\frac{x^3 + x^2 + x}{x^2 + x + 1} \Rightarrow \Delta = -3 \quad \text{ریشه حقیقی ندارد}$
 $\frac{x^3 + x^2 + x}{x^2 + x + 1} = \Delta = -1 \quad \text{مثبت}$
 $+ \frac{1}{x} - \frac{1}{x} + \quad (-\infty + \infty)$

الف) $\frac{x^2-1}{x^2-x} \geq 0 \quad x^2-x \neq 0 \quad \frac{(x-1)(x+1)}{x(x-1)} = \frac{1}{x} \quad \Delta = -1^2 = -1 < 0$
 $-\frac{1}{x} - \frac{0}{x} + \frac{1}{x} + \quad (-\infty -1) \cup (0 + \infty)$

ب) $\frac{(x-4)(x+4)}{(x-4)(x-1)} \geq 0 \quad +\frac{-4}{x} - \frac{1}{x} + \frac{4}{x} +$
 $(-\infty -4] \cup (1 -4) \cup (4 + \infty)$

الف) $y_1^2 - x = y_2^2 \rightarrow y_1 = y_2 \checkmark$
 $y_1^2 - x = y_2^2$
 ب) $|y| + 1 = 4 \rightarrow |y| = \pm 3 \times$

ج) $\sqrt{x-4} + |y-2| = 0 \times$ (نی)

د) $x=0 \quad 0 = \cos y \quad y = \pi, 3\pi, \dots$

الف) $\frac{x+k}{x^2-k} > 0 \quad x^2-k > 0 \quad \frac{0}{+} - \frac{k}{-} +$
 $x(x-k) > 0 \quad (-\infty, 0) \cup (k, \infty)$
 ج)

ب) $x^2 - kx^2 > 0 \quad \frac{k}{+} - \frac{k}{+} - \frac{k}{+} +$
 $x^2(x-k) > 0 \quad (-\infty, -k) \cup (k, \infty)$
 $x^2(x-k)(x+k) > 0$

الف) $\sqrt{4-x} = 4-x \geq 0 \quad \sqrt{x-2} = x-2 \geq 0$
 $x \leq 4 \quad x \geq 2$
 $D = 2 \leq x \leq 4$

ج) $x-k > 0$
 $x > k$

ب)

