

$$\frac{1}{2} - \left(\frac{-\sqrt{r}}{r} \right) + \frac{\sqrt{r}}{r} + \left(\frac{-\sqrt{r}}{r} \right) = \frac{\sqrt{r}}{r} + \frac{\sqrt{r}}{r} + \frac{r\sqrt{r}}{r} = \frac{2\sqrt{r}}{r}$$

$\rightarrow \sin = \text{صفر} \rightarrow \cos(0) + \sin \pi \rightarrow 1 + 1 = 2$

$$\left. \begin{array}{l} x^r + r x \quad x > a \\ r x + a + r \quad x \leq a \end{array} \right\} \xrightarrow{x=a} \begin{array}{l} a^r + r a = r a + a + r \rightarrow \\ a^r + r a - r a - a - r = 0 \rightarrow \\ a^r + a - r = 0 \rightarrow (a+r)(a-1) = r \end{array}$$

$$x^r + r x \xrightarrow{x=1} \boxed{1+r=a}$$

$$\boxed{a \cdot 1 = a}$$

$$\boxed{a=1} \quad \boxed{a > 0}$$

$2x^2 - 6$ $|x+1| \geq 2$ $\xrightarrow{\text{قد مطلق را برداریم}} x+1 \geq 2 \rightarrow x \geq 1$
 $a+2x$ $-3 \leq x \leq 1$ $x+1 \leq -2 \rightarrow x \leq -3$

فقط در نقطه (-3) اشتراک دارند، جایگزینی می‌کنیم

$$2(-3)^2 - b = a + (2 \times (-3)) \rightarrow 11 - b = a - 6 \rightarrow 11 + 6 = a + b = 17$$

الف) $\frac{1}{x^3 - 4x^2} \rightarrow x^3 - 4x^2 > 0 \rightarrow x^2(x - 4) > 0 \rightarrow R - \{0, 4\} = D$

$$\frac{1}{x^3 + x^2 + x + 1} \rightarrow \frac{1}{x^2(x^2 + x + 1)} \rightarrow \frac{1}{x^2(x+1)(x^2+x+1)} \rightarrow$$

الف) $\sqrt{x^2-1} + \sqrt{x-2} \geq 0 \rightarrow x \geq 2$ اشتراك $\rightarrow x \geq 2$
 $\geq 0 \rightarrow (x-1)(x+1) \geq 0 \rightarrow x \geq 1 \text{ و } x \leq -1$
 $\sqrt{4-3x} \geq 0 \rightarrow 4-3x \geq 0 \rightarrow x \leq \frac{4}{3}$
 $\sqrt{4x-3} \geq 0 \rightarrow 4x-3 \geq 0 \rightarrow x \geq \frac{3}{4}$
 $D = [\frac{3}{4}, \frac{4}{3}]$

ب) $\sqrt{4x-a} \geq 0 \rightarrow x \geq \frac{a}{4}$
 $\sqrt{b-3x} \geq 0 \rightarrow b-3x \geq 0 \rightarrow x \leq \frac{b}{3}$
 $\left[\frac{a}{4}, \frac{b}{3} \right] = \emptyset$
 $\frac{a}{4} = \frac{b}{3} \rightarrow a = \frac{4}{3}b$
 $\frac{b}{3} = \frac{a}{4} \rightarrow b = \frac{3}{4}a$
 $\frac{1}{2} = \frac{4}{12} = \frac{b}{a}$

ج) $x^2-x-6 \geq 0 \rightarrow (x-3)(x+2) \geq 0 \rightarrow x \leq -2 \text{ و } x \geq 3$
 $x^2-13x^2+24 \geq 0 \rightarrow x^2(x^2-13x+24) \geq 0 \rightarrow x^2(x-4)(x-6) \geq 0$
 $D = [-2, 0) \cup [4, 6] \cup (9, +\infty)$
 $x=0, x=4, x=6, x=9$

د) $x^2-2x^2-5x+6 \geq 0 \rightarrow (x-1)(x-3)(x+2) \geq 0 \rightarrow x \leq -2 \text{ و } 1 \leq x \leq 3$
 $x^2+x^2-5x-6 \geq 0 \rightarrow (x+2)(x^2-x-3) \geq 0 \rightarrow x \geq -2 \text{ و } x \leq -1 \text{ و } x \geq 3$
 $D = (-\infty, -2] \cup [3, +\infty)$

هـ) $y = \sqrt{2[x]-4} \geq 0 \rightarrow 2[x] \geq 4 \rightarrow [x] \geq 2 \rightarrow D = [2, +\infty)$
 $y = \sqrt{2[x]-5} \geq 0 \rightarrow 2[x] \geq 5 \rightarrow [x] \geq \frac{5}{2} \rightarrow x \geq 2.5 \rightarrow D = [2.5, +\infty)$

و) $\sqrt{\frac{x+1}{x-2}} + \sqrt{\frac{4-x}{x^2+2x+4}} \geq 0 \rightarrow x \geq -1$
 $\sqrt{\frac{4-x}{x^2+2x+4}} \geq 0 \rightarrow (x+2)^2 \geq 0 \rightarrow x \geq -2$
 $x \geq -1 \wedge x \geq -2 \rightarrow x \geq -1$
 $\sqrt{[x]-4} + \sqrt{4-[x]} \geq 0 \rightarrow [x] \leq 4 \rightarrow x \leq 4$
 $D = \emptyset$
 $D = \text{شبه}$