

الف) $y = \sqrt{x^2 - 1} + \sqrt{x - 2}$ $x - 2 \geq 0 \Rightarrow x \geq 2 \quad (2, +\infty) \cap [1, +\infty) \Rightarrow$
 $x^2 - 1 \geq 0 \Rightarrow x^2 \geq 1 \quad D_p = [1, +\infty)$
 $x \geq 1$ ✓

$\Rightarrow y = \sqrt{4 - 4x} + \sqrt{4x - 4}$ $4 - 4x \geq 0 \Rightarrow 4x \leq 4 \Rightarrow x \leq 1$
 $4x - 4 \geq 0 \Rightarrow 4x \geq 4 \Rightarrow x \geq 1 \quad D_p = \left[\frac{1}{4}, 1\right]$
 $x \geq \frac{1}{4}$ ✓

$y = \sqrt{4x - a} + \sqrt{b - 4x}$
 $4x - a \geq 0 \Rightarrow 4x \geq a \Rightarrow x \geq \frac{a}{4}$
 $b - 4x \geq 0 \Rightarrow 4x \leq b \Rightarrow x \leq \frac{b}{4}$
 $D_p = \left[\frac{a}{4}, \frac{b}{4}\right] \cap (-\infty, \frac{b}{4}]$
 $\frac{a}{4} \leq \frac{b}{4} \Rightarrow a \leq b$
 $a = 12 \quad b = 4 \quad \frac{b}{4} = \frac{1}{4}$ ✓

الف) $y = \sqrt{\frac{x^2 - x - 4}{x^4 - 16x^2 + 4}}$ $= \sqrt{\frac{(x-2)(x+2)}{(x-2)(x+2)(x-2)(x+2)}}$
 $x = 2 \quad x = -2 \quad x = 2 \quad x = -2$
 $D_p = (-\infty, -2) \cup (2, +\infty)$
 $\Rightarrow y = \sqrt{\frac{x^4 - 2x^2 - 4x + 4}{x^4 + 2x^2 - 4x - 4}}$ $= \sqrt{\frac{(x-1)(x+1)(x-2)(x+2)}{(x-1)(x+1)(x-2)(x+2)}}$
 $x = 1 \quad x = -1 \quad x = 2 \quad x = -2$
 $D_p = (-\infty, -2) \cup (-1, 1) \cup (2, +\infty)$

الف) $y = \sqrt{2[x] - 4}$ $2[x] - 4 \geq 0 \Rightarrow 2[x] \geq 4 \Rightarrow [x] \geq 2$
 $D_p = [2, +\infty)$
 $\Rightarrow y = \sqrt{2[x] - 4}$ $2[x] \geq 4 \Rightarrow [x] \geq 2 \quad D_p = [2, +\infty)$

الف) $y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+4}}$ $D_p = [-1, 4] - \{3\}$
 $\Rightarrow y = \sqrt{[x] - 4} + \sqrt{4 - [x]}$ $[x] - 4 \geq 0 \Rightarrow [x] \geq 4 \Rightarrow x = [4, +\infty)$
 $[x] \geq 4$
 $4 - [x] \geq 0 \Rightarrow [x] \leq 4 \Rightarrow x = (-\infty, 4]$
 $D_p = \emptyset$

$$8-الف) \quad y = \sqrt{\frac{n^2 - n - 4}{n^2 - 13n^2 + 44}} \leadsto \frac{n^2 - n - 4}{n^2 - 13n^2 + 44} \geq 0 \leadsto \frac{(n-3)(n+2)}{(n^2-9)(n^2-4)} \geq 0$$

$$\frac{(n-3)(n+2)}{(n-3)(n+3)(n-2)(n+2)} \geq 0 \leadsto \begin{array}{ccccccc} & -3 & -2^* & 2 & 3^* & & \\ + & \cancel{0} & - & \cancel{0} & - & \cancel{0} & + \end{array}$$

$$D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$$

$$f(n) = \begin{cases} 2n^2 - b & n \geq 1 \\ a + 2n & -3 \leq n \leq -1 \\ 2n^2 - b & n \leq -3 \end{cases}$$

۴- ضابطه‌ی تابع را بازنویسید

$$a + 2(-3) = 2(-3)^2 - b$$

$$\hookrightarrow a - 4 = 12 - b \leadsto \boxed{a + b = 16}$$

$x = -3$ در دو ضابطه مشترک است پس: