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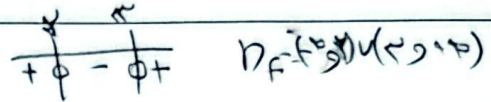
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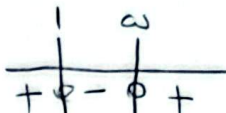
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$$x^2 - 6x + 9 > 0 \rightarrow (x-3)(x-3) > 0$$



$$x^2 - 4x + 5 < 0 \rightarrow \text{ریشه} = 1 \text{ و } 5 \quad \frac{c}{a} = 5$$



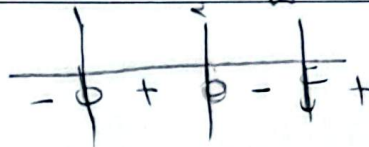
$$x^2 + 4x + 5 > 0 \rightarrow \text{ریشه} = -1 \text{ و } -5 \quad \frac{c}{a} = -5$$



$$x^2 - 7x + 4 < 0 \rightarrow \text{ریشه} = 1 \text{ و } 4 \quad \frac{c}{a} = 4$$

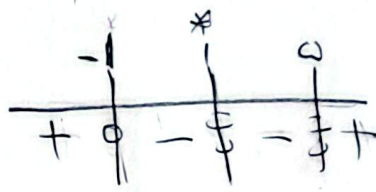


$$\frac{(x-1)(x-2)}{x-5} < 0$$



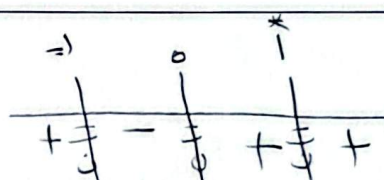
$$D_f = (1, 2) \cup (5, \infty)$$

$$\frac{x^2 - 1}{x^2 - 4x + 5} > 0 \rightarrow \frac{x^2 - 1}{x^2 - 4x + 5} > 0$$



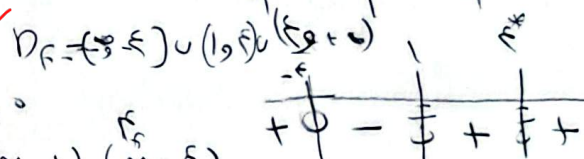
$$D_f = (-\infty, -1) \cup (1, 5) \cup (5, \infty)$$

$$y = \sqrt{\frac{x^2 - 1}{x^2 - 4x + 5}} \Rightarrow \frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$$



$$D_f = (-\infty, -1) \cup (0, 1) \cup (1, 5) \cup (5, \infty)$$

$$y = \sqrt{\frac{x^2 - 14}{x^2 - 6x + 5}} \rightarrow \frac{x^2 - 14}{x^2 - 6x + 5} \geq 0$$



$$y = \sqrt{5 - \sqrt{2 - x}} \rightarrow 2 - x \geq 0 \rightarrow x \leq 2$$

$$D_f = [-1, 2]$$

$$5 - \sqrt{2 - x} \geq 0$$

$$5 - \sqrt{2 - x} \geq 0 \rightarrow \sqrt{2 - x} \leq 5 \rightarrow 2 - x \leq 25 \rightarrow x \geq -23$$

$$y = \sqrt{5 - \sqrt{2 - x}} \rightarrow 2 - x \geq 0 \rightarrow x \leq 2$$

$$D_f = [-23, 2]$$

$$5 - \sqrt{2 - x} \geq 0 \rightarrow \sqrt{2 - x} \leq 5 \rightarrow 2 - x \leq 25 \rightarrow x \geq -23$$

$$y = \sqrt{5-2x^2} \Rightarrow 5-2x^2 \geq 0 \quad 2x^2 \leq 5 \quad x^2 \leq \frac{5}{2} \rightarrow |x| \leq \sqrt{\frac{5}{2}}$$

$$D_f = [-\sqrt{\frac{5}{2}}, \sqrt{\frac{5}{2}}] \quad \boxed{x \leq -\sqrt{\frac{5}{2}}} \quad \boxed{x \geq \sqrt{\frac{5}{2}}}$$

Ⓟ ✓

$$y = \sqrt{x|1-x|} \rightarrow x|1-x| \geq 0 \quad x|1-x| \geq 0 \quad |1-x| \geq 0$$

$$D_f = (-\infty, -1] \cup (0, +\infty) \quad \boxed{x \geq 1}$$

$$|x| - 5 \neq 0 \quad |x| \neq 5 \quad \boxed{x \neq 5} \quad \boxed{x \neq -5} \quad D_f = \mathbb{R} - \{5, -5\}$$

Ⓟ ✓

$$\sqrt{x} - 5 \neq 0 \quad \sqrt{x} \neq 5 \quad \boxed{x \neq 25} \quad D_f = [0, +\infty) - \{25\}$$

$$\boxed{x \geq 0}$$

$$a) \cos nx - 1 \neq 0 \quad \cos nx \neq 1 \quad \cos nx \neq \frac{1}{2} \quad \mathbb{R} - \left\{ \frac{k\pi}{n}, \frac{k\pi}{n} + \frac{2\pi}{n} \right\}$$

$$b) \sin nx + 1 \neq 0 \quad \sin nx \neq -1 \quad \sin nx \neq \frac{1}{2} \quad \mathbb{R} - \left\{ \frac{k\pi + \frac{\pi}{2}}{n}, \frac{k\pi + \frac{3\pi}{2}}{n} \right\}$$

$$c) \sin nx \cos nx \neq 0 \quad \frac{\cos nx}{\sin nx} \neq 0 \rightarrow \mathbb{R} - \left\{ \frac{k\pi}{n} \right\} \cup \left\{ \frac{k\pi + \frac{\pi}{2}}{n} \right\}$$

$$d) \sin^2 nx \neq 0 \rightarrow \boxed{\sin nx \neq \pm \frac{\sqrt{2}}{2}} \rightarrow \mathbb{R} - \left\{ \frac{k\pi + \frac{\pi}{4}}{n}, \frac{k\pi + \frac{3\pi}{4}}{n}, \frac{k\pi + \frac{5\pi}{4}}{n}, \frac{k\pi + \frac{7\pi}{4}}{n} \right\}$$

$$y = \frac{1}{\sqrt{|x-1| - \frac{1}{2}}} \quad \frac{|x-1| - \frac{1}{2}}{2} > 0 \quad \boxed{D_f = (-\infty, \frac{3}{2}) \cup (\frac{5}{2}, +\infty)}$$

Ⓟ ✓

$$\frac{1}{\sqrt{|x-1| - \frac{1}{2}}} \quad |x-1| > \frac{1}{2} \rightarrow \boxed{x > \frac{3}{2}} \quad \boxed{x < \frac{5}{2}}$$

$$-x + 1 > \frac{1}{2} \rightarrow -x > -\frac{1}{2} \rightarrow x < \frac{1}{2}$$

$$y = \sqrt{5-2|x|} \rightarrow 5-2|x| \geq 0 \quad 2|x| \leq 5 \rightarrow |x| \leq \frac{5}{2}$$

$$D_f = \left\{ x \mid -\frac{5}{2} \leq x \leq \frac{5}{2} \right\} \quad \boxed{x \leq -\frac{5}{2}} \quad \boxed{x \geq \frac{5}{2}}$$

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$$y = \sqrt{\frac{|x|}{|x|}} \quad \frac{|x|}{|x|} \geq 0 \quad D_f = \mathbb{R} - \{0\}$$