

1.

$$b) = +\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - 3\left(\frac{\sqrt{2}}{2}\right)$$

$$\frac{r \sqrt{u}}{r} - \frac{r \sqrt{r}}{r} = -\frac{\sqrt{r}}{r}$$

$$7) \quad \cos(\sin^{-1} \frac{1}{r}) + \sin(\cos^{-1} \frac{1}{\mu}) = 2$$

$$f(x) = \begin{cases} x^2 + Kx & x \geq a \\ 2x + a + 2 & x < a \end{cases}$$

$$a^2 + Ka = 2a + 2$$

$$f(1) = 1 + K = 2$$

$$a^2 + a - 2 = 0$$

$$(a+2)(a-1) = 0$$

$$\Rightarrow a = -2 \text{ or } a = 1 \Rightarrow a = 1$$

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

$$x+1 \geq 2 \text{ or } x+1 \leq -2 \Rightarrow x \geq 1 \text{ or } x \leq -3$$

ضرایب اول برای بازه‌های $(-3, -1]$ و $(1, +\infty)$ تعریف شد
 ضرایب دوم برای بازه‌های $[-3, -1]$ تعریف شد
 برای $x = -3$ در هر دو تعریف

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

$$18 - b = a - 6 \quad a + b = 18 + a = 24$$

$$y = \frac{1}{x^3 - Kx^2}$$

$$x^3 - Kx^2 \neq 0$$

$$x^2(x - K) \neq 0 \Rightarrow x \neq 0, K$$

$$D_f = \mathbb{R} - \{0, K\}$$

$$y = \frac{1}{2x^3 + Kx^2 + 2x + K}$$

$$D_f = \mathbb{R} - \{-2\}$$

$$2(-1)^3 + K(-1)^2 + 2(-1) + K = 0$$

$$2x^3 + Kx^2 + 2x + K = 2x^2(x+1) + 2x(x+1) = 0 \Rightarrow x = -2$$

الف) $\sqrt{x^2-1} + \sqrt{x-2}$ $D_f = (2, +\infty)$

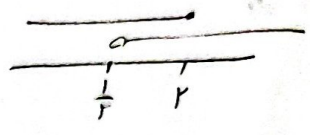
$x^2-1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow \begin{cases} x \geq 1 \\ x \leq -1 \end{cases}$



$x-2 \geq 0 \rightarrow \boxed{x \geq 2}$

ب) $\frac{\sqrt{4-3x}}{\sqrt{9x-2}}$

$4-3x \geq 0 \rightarrow 4 \leq 3x \rightarrow \boxed{x \geq \frac{4}{3}}$



$9x-2 \geq 0 \rightarrow 9x \geq 2 \rightarrow \boxed{x \geq \frac{2}{9}}$

$(-\infty, \frac{4}{3}] \cap [\frac{2}{9}, +\infty) \rightarrow D_f = (\frac{2}{9}, \frac{4}{3}]$

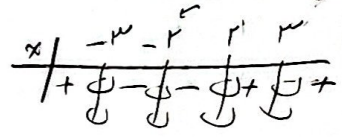
$y = \sqrt{4x-a} + \sqrt{b-3x} \Rightarrow D_f = \{x\} \Rightarrow \frac{b}{a} = ? \quad \frac{a}{12} \neq \frac{1}{12}$

$4x-a \geq 0 \rightarrow 4x \geq a \rightarrow \boxed{x \geq \frac{a}{4}}$
 $b-3x \geq 0 \rightarrow 3x \leq b \rightarrow \boxed{x \leq \frac{b}{3}}$

$\frac{a}{4} = \frac{b}{3} = 2 \rightarrow \underline{a=8} \rightarrow \underline{b=6}$

$[\frac{a}{4}, +\infty) \cap (-\infty, \frac{b}{3}] = [2, 2]$ *مقتضی*

الف) $y = \sqrt{\frac{x^2-x-6}{x^2-13x^2+34}}$ $\rightarrow (x-3) \rightarrow (-2)$



$x^2-13x^2+34 \Rightarrow (7-9)(4-4) \Rightarrow x^2=4 \Rightarrow x = \pm 2$

ب) $y = \sqrt{\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}}$ $D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$

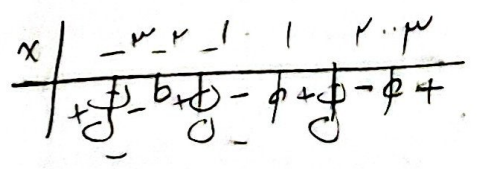
جمع ضرایب توان مساوی قدر ضریب باید صفر است پس بد
 خنثی پذیر است

جمع ضرایب توان مساوی قدر ضریب باید صفر است پس بد
 1- x خنثی پذیر است

$\frac{x^3+2x^2-5x-6}{x^3-2x^2-5x+6} \div \frac{x+1}{x+1}$
 $\frac{x^3+2x^2-5x-6}{x^3-2x^2-5x+6}$
 $-x^3-2x^2+5x-6$
 $-4x^2-11x-12$
 $-4x^2-4x-4$
 $-7x-8$

$\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6} \div \frac{x-1}{x-1}$
 $\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}$
 $-x^3+2x^2+5x-6$
 $-4x^2-11x+12$
 $-4x^2-4x-4$
 $-7x+16$

ب) $y = \sqrt{\frac{(x-1)(x-3)(x+2)}{(x+1)(x-2)(x+3)}}$ $\rightarrow \textcircled{1} \textcircled{2} \textcircled{3}$



$D_f = (-\infty, -3) \cup (-2, -1) \cup (1, 2) \cup (3, +\infty)$

الف) $y = \sqrt{2(x) - 4}$

$2(x) - 4 \geq 0 \rightarrow 2(x) \geq 4 \rightarrow (x) \geq 2 \rightarrow [2, +\infty)$
 $D_f = [2, +\infty)$

ب) $y = \sqrt{2(x) - 6}$ $2(x) - 6 \geq 0 \rightarrow 2(x) \geq 6 \rightarrow (x) \geq 3 \rightarrow [3, +\infty)$
 $D_f = [3, +\infty)$ $x \geq 3$

الف) $y = \sqrt{\frac{x+4}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+4}}$ $\rightarrow 4-x \geq 0 \rightarrow x \leq 4$ $D_f = (-\infty, 4]$
 $\Delta = 4 - 4(1)(4) = -12 < 0$
 $D_f = (-\infty, -1] \cup (3, +\infty)$

$D_f' = (-\infty, -1] \cup (3, 4]$

ب) $y = \sqrt{(x)-4} + \sqrt{2-(x)}$

$(x)-4 \geq 0 \rightarrow (x) \geq 4 \rightarrow D_f = [4, +\infty)$

$2-(x) \geq 0 \rightarrow 2 \geq (x) \rightarrow D_g = (-\infty, 2)$

$D_f' = \emptyset$

$\Rightarrow$ اشتدای نیست

