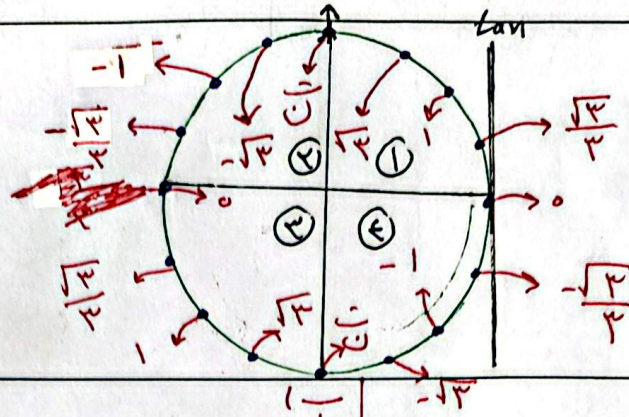




$$\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} = \boxed{\frac{5\sqrt{3}}{2}}$$

$$\frac{1}{2} + (-1) - 2 = \boxed{-\frac{5}{2}}$$

$$1 + 1 = \boxed{2}$$

$$-\frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} + \frac{2\sqrt{3}}{2} = \boxed{\frac{4\sqrt{3}}{2}}$$

$$f(x) = \begin{cases} x^2 + 4x & x \geq a \\ 2x + a + 2 & x \leq a \end{cases}$$

$\uparrow$
 $f(1)$

$$a^2 + 4a = 2a + a + 2 \Rightarrow a^2 + a - 2 = 0$$

$$(a+2)(a-1) \rightarrow a = 1 \checkmark$$

$\Rightarrow -2x$



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

$$|x+1| \geq 2 \Rightarrow x+1 \geq 2 \quad x \geq 1$$

$$x+1 \leq -2 \quad x \leq -3$$

$$-2 \Rightarrow 11 - b = a - 4$$

$$\Rightarrow \boxed{2f = a + b}$$

$$y = \frac{1}{x(x-4)}$$

$\frac{0}{-4} \quad \frac{4}{0}$

$$D_f = \mathbb{R} - \{0, 4\}$$

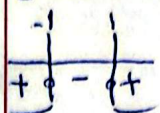
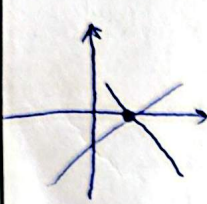
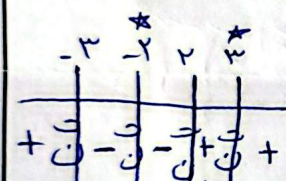
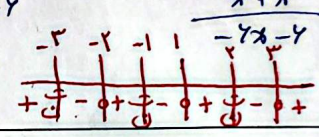
$$y = \frac{1}{2x^3 + 4x^2 + 2x + 4} \Rightarrow 2x^3 + 4x^2 + 2x + 4 = 0$$

$$2x^2(x+2) + 2(x+2) = 0 \quad (x+2)(2x^2+2) = 0$$

$$(x+2)(2)(x^2+1) = 0$$

$\downarrow$
 (-2) همیشه مثبت

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

$\frac{\sqrt{4-3x}}{\sqrt{4x-3}}$ $4x-3 > 0 \quad 4-3x \geq 0$ $x > \frac{3}{4} \quad x \leq \frac{4}{3}$ $D_f = \mathbb{R} - \left\{ \left(\frac{1}{2}, 2 \right] \right\}$	(الف) $y = \sqrt{x^2-1} + \sqrt{x-2} \Rightarrow \sqrt{(x-1)(x+1)}$  $x-2 \geq 0 \quad x \geq 2$ اشتراک گیری $D_f = [2, +\infty)$	6
$D_f = \{2\}$ $12-a=0$ $b-4=0$ $b=2$ $a=12$ $\frac{b}{a} = \frac{1}{6}$ 	(الف) $\frac{x^2-x-2}{x^4-13x^2+36} \geq 0 \Rightarrow \frac{(x-3)(x+2)}{(x+2)(x-2)(x+3)(x-2)} \geq 0$ (ب) $\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6} \geq 0 \Rightarrow \frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \geq 0$  $D_f = \mathbb{R} - \left\{ [-3, 2] \cup \{3\} \right\}$  $\mathbb{R} - \left\{ [-3, 2] \cup [-1, 2] \cup [2, 3] \right\}$	7
$y = \sqrt{2[x]-4} \quad 2[x]-4 \geq 0$ $[x] \geq 2 \quad [2, +\infty)$	(الف) $\sqrt{2[x]-4} \Rightarrow 2[x]-4 \geq 0$ $2[x] \geq 4 \quad [x] \geq \frac{4}{2} \Rightarrow$ $[x] \geq 2 \quad [2, +\infty)$	9
$[x]-4 \geq 0 \quad 2-[x] \geq 0$ $[x] \geq 4 \quad \cap \quad [x] \leq 2 \rightarrow \emptyset$ $D_f = \emptyset$	(الف) $\frac{x+1}{ x-3 } \neq 0 \quad \frac{4-x}{x^2+2x+4} \geq 0$ همیشه مثبت $4-x \geq 0 \quad x+1 \geq 0 \quad x \geq -1$ $4 > x$ $x \neq 0$ $D_f = [-1, 3) \cup (3, 4]$	10

