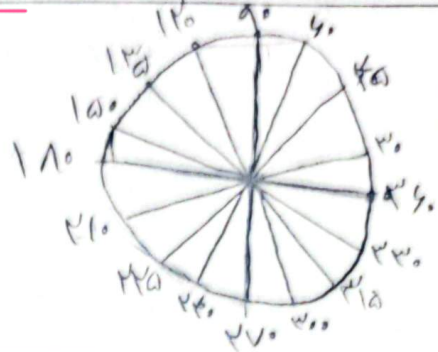


$$\begin{aligned} 30^\circ &= \frac{\sqrt{3}}{2} & 120^\circ &= 0 & 210^\circ &= 0 \\ 45^\circ &= 1 & 135^\circ &= \frac{\sqrt{3}}{2} & 225^\circ &= \frac{\sqrt{3}}{2} \\ 60^\circ &= \sqrt{3} & 150^\circ &= 1 & 240^\circ &= 1 \\ 75^\circ &= \frac{\sqrt{3}}{2} & 165^\circ &= \frac{\sqrt{3}}{2} & 255^\circ &= \frac{\sqrt{3}}{2} \\ 90^\circ &= 0 & 180^\circ &= 0 & 270^\circ &= 0 \\ 105^\circ &= -\frac{\sqrt{3}}{2} & 195^\circ &= -\frac{\sqrt{3}}{2} & 285^\circ &= -\frac{\sqrt{3}}{2} \\ 120^\circ &= -1 & 210^\circ &= -1 & 300^\circ &= -1 \\ 135^\circ &= -\frac{\sqrt{3}}{2} & 225^\circ &= -\frac{\sqrt{3}}{2} & 315^\circ &= -\frac{\sqrt{3}}{2} \\ 150^\circ &= -\sqrt{3} & 240^\circ &= -\sqrt{3} & 330^\circ &= -\sqrt{3} \end{aligned}$$



الف) $\frac{1}{2} + (-1) + 2(-1) \rightarrow \frac{1}{2} - 1 - 2 = -\frac{3}{2}$

ب) $-(\frac{-\sqrt{3}}{2}) + \frac{\sqrt{3}}{2} + (3(\frac{-\sqrt{3}}{2})) = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} + \frac{3\sqrt{3}}{2} = \frac{5\sqrt{3}}{2}$

ج) $\frac{-1}{\sqrt{3}} + 2(\frac{-1}{\sqrt{3}}) - 2(\frac{-1}{\sqrt{3}}) = \frac{-1}{\sqrt{3}} + \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$

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

$x^2 + 4x \geq a \rightarrow x = a \rightarrow a^2 + 4a = 2a + a + 2 \rightarrow a^2 + 2a - 2 = 0 \rightarrow (a+2)(a-1) = 0 \rightarrow a = -2, a = 1$

$x^2 + 4x \leq a \rightarrow x = a \rightarrow a^2 + 4a = 2a + a + 2 \rightarrow a^2 + 2a - 2 = 0 \rightarrow (a+2)(a-1) = 0 \rightarrow a = -2, a = 1$

$x^2 + 4x \geq 1 \rightarrow 1 + 4 = 5$

$a = 4 \leq a < 5$

$2x^2 - b \mid x+1 \geq 2 \rightarrow x+1 \geq 2 \rightarrow x \geq 1$

$a+2x \mid -3 \leq x \leq 1 \rightarrow x+1 \leq -2 \rightarrow x \leq -3$

فقط در نقطه (-3) اشتراک دارند جایگزینی می کنیم

$2(-3)^2 - b = a + (2x(-3)) \rightarrow 18 - b = a - 12 \rightarrow 18 + 12 = a + b = 30$

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

ب) $\frac{1}{2x^3 + 4x^2 + 4x + 4} \rightarrow 2(x^3 + 2x^2 + 2x + 2) \rightarrow x+2 \neq 0 \rightarrow R - \{-2\} = D$

الف) $\sqrt{x^2-1} + \sqrt{x-2} \geq 0 \rightarrow x \geq 2$ اشتراک $\rightarrow x \geq 2$

$\geq 0 \rightarrow (x-1)(x+1) \geq 0 \rightarrow x > 1 \text{ و } x \leq -1$

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

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

$x=2 \quad x=-1$

$D = [2, +\infty)$

$\sqrt{4x-a} \geq 0 \rightarrow x \geq \frac{a}{4}$

$\sqrt{b-3x} \geq 0 \rightarrow b-3x \geq 0 \rightarrow x \leq \frac{b}{3}$

$\left[\frac{a}{4}, \frac{b}{3} \right] = \emptyset$

$\frac{a}{4} = \frac{b}{3} \rightarrow a = \frac{4}{3}b$

$\frac{b}{3} = \frac{a}{4} \rightarrow b = \frac{3}{4}a$

$\frac{1}{2} = \frac{4}{12} = \frac{b}{a}$

$x^2-x-6 \geq 0 \rightarrow (x-3)(x+2) = 0 \rightarrow x=3 \text{ و } x=-2$

$x^4-13x^2+36 \geq 0 \rightarrow x^2(x^2-13+36) \rightarrow x^2(x^2-13+36) = 0$

$x^2(x^2-13+36) = 0 \rightarrow x^2(x^2-13+36) = 0$

$D = [-2, 0) \cup [3, 4) \cup (9, +\infty)$

$x=0, x=4, x=9$

$x^2-2x^2-5x+6 \geq 0 \rightarrow (x-1)(x-3)(x+2) \rightarrow x=1, x=3, x=-2$

$x^3+x^2-5x-6 \geq 0 \rightarrow (x+2)(x^2-x-3) \rightarrow x=-2, x=1, x=3$

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

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

$y = \sqrt{2[x]-5} \geq 0 \rightarrow 2[x] \geq 5 \rightarrow [x] \geq \frac{5}{2} \rightarrow x \geq 2.5$

$D = [2.5, +\infty)$

$\sqrt{x+1} + \sqrt{\frac{4-x}{x^2+2x+4}} \geq 0 \rightarrow x \geq -1$

$\sqrt{\frac{4-x}{x^2+2x+4}} \geq 0 \rightarrow (x+2)^2 \geq 0 \rightarrow x \geq -2$

$x \geq -1 \wedge x \geq -2 \rightarrow x \geq -1$

$x \geq 3 \rightarrow [x] \geq 3$

$D = [3, +\infty)$

ب) $\sqrt{[x]-4} + \sqrt{4-[x]} \geq 0 \rightarrow [x] \leq 4 \rightarrow x \leq 4$

$D = \emptyset$

$D = \emptyset$

$$ج-۲) C \cdot t \frac{r_0}{r} + r C \cdot t \frac{r_0}{r} - r b a n \frac{a_0}{r} = -\sqrt{\frac{r}{r}} + r(\sqrt{\frac{r}{r}}) - r(-\sqrt{\frac{r}{r}}) = \frac{4\sqrt{r}}{r}$$

الف-۸) $y = \sqrt{\frac{n^2 - n - 4}{n^4 - 13n^2 + 34}} \gtrsim \frac{n^2 - n - 4}{n^4 - 13n^2 + 34} \geq 0 \rightarrow \frac{(n-3)(n+2)}{(n^2-9)(n^2-4)} \geq 0$

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

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

الف-۸) $y = \sqrt{\frac{n^3 - 2n^2 - 5n + 4}{n^3 + 2n^2 - 5n - 4}} \gtrsim \frac{n^3 - 2n^2 - 5n + 4}{n^3 + 2n^2 - 5n - 4} \geq 0 \rightarrow$

مخوضایب منفرقیست پذیر بر $(n-1)$

مخوضایب در آن زوج و فرد برابر نیست پذیر بر $(n+1)$

$$\frac{(n-1)(n^2 - n - 4)}{(n+1)(n^2 + n - 4)} \geq 0 \rightarrow \frac{(n-1)(n-3)(n+2)}{(n+1)(n+3)(n-2)} \geq 0 \rightarrow \begin{array}{ccccccc} -3 & -2 & -1 & & 1 & 2 & 3 \\ + & \cancel{-} & + & \cancel{-} & - & \cancel{+} & - & + \end{array}$$

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

الف-۱۰) $y = \sqrt{\frac{n+1}{|n-4|}} + \sqrt{\frac{4-n}{n^2+2n+2}}$

به نقلاً معادلت مفروض!

$\frac{n+1}{|n-4|} \geq 0 \rightarrow n \geq -1, n \neq 4 \quad I$

$\frac{4-n}{n^2+2n+2} \geq 0 \rightarrow n \leq 4 \quad II$

به $\Delta < 0$ و محاوره مثبت و بدون معادلت

$$I \cap II \rightarrow D_f = [-1, 4) \cup (4, 4] \subseteq [-1, 4] - \{4\}$$