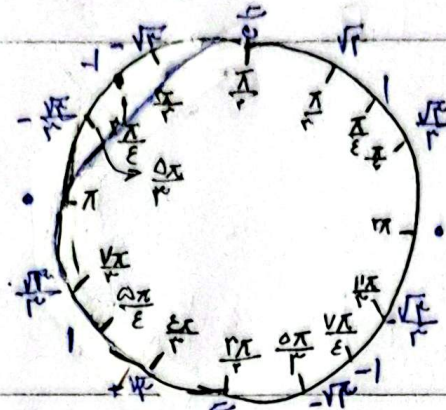




$$\sin \frac{\pi}{4} + \cos \pi + r \tan \frac{\pi}{4} = \frac{1}{r} + -1 - r = \frac{-5}{r}$$

$$-\cos \frac{3\pi}{4} + \sin \frac{2\pi}{3} + r \sin \frac{\pi}{6} = \frac{\sqrt{2}}{r} + \frac{\sqrt{3}}{r} + r \left(\frac{\sqrt{2}}{r} \right) = \frac{2\sqrt{2}}{r}$$

$$\cos \frac{\pi}{4} + \tan \frac{\pi}{4} - r \tan \frac{3\pi}{4} = \frac{\sqrt{2}}{r} + \sqrt{2} + \frac{r\sqrt{2}}{r} = \frac{2\sqrt{2}}{r}$$

الف)

ب)

ج)

$$\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = \cos(0) + \sin(\frac{\pi}{4}) = 1 + \frac{\sqrt{2}}{2}$$

$$f(x) = \begin{cases} x^2 + \varepsilon x & x > a \\ rx + r & x \leq a \end{cases} \Rightarrow \begin{cases} a^2 + \varepsilon a & a > a \\ ra + r & a \leq a \end{cases} \Rightarrow a^2 + \varepsilon a = ra + r \Rightarrow a^2 + \varepsilon a - r = 0$$

$$f(x) = \begin{cases} x^2 + \varepsilon x & x > 1 \\ rx + r & x \leq 1 \end{cases} \Rightarrow f(1) = (1) + \varepsilon(1) = 0$$

$$f(x) = \begin{cases} rx - b & |x| > 1 \\ a + rx & -1 \leq x \leq 1 \end{cases} \Rightarrow \begin{cases} |x| > 1 \\ x+1 \geq 2 \\ x+1 \leq -2 \end{cases} \Rightarrow \begin{cases} x > 1 \\ x < -1 \end{cases} \Rightarrow \begin{cases} r(1) - b = a + r(-1) \\ 11 - b = a - 4 \\ r\varepsilon = a + b \end{cases}$$

$$f = \frac{1}{x^2 - \varepsilon x^2} \Rightarrow \frac{1}{x^2 - \varepsilon x^2} = \frac{1}{x^2(1 - \varepsilon)} \Rightarrow D_f = \mathbb{R} - \{0, \varepsilon\}$$

$$f = \frac{1}{rx^2 + \varepsilon x^2 + rx + \varepsilon} \Rightarrow \frac{1}{rx^2 + \varepsilon x^2 + rx + \varepsilon} = \frac{1}{(x^2 + \varepsilon)(rx + \varepsilon)} \Rightarrow D_f = \mathbb{R} - \{r\}$$

$$y = \sqrt{x-1} + \sqrt{x-5} \quad \begin{matrix} x-1 \geq 0 \\ x-5 \geq 0 \end{matrix} \Rightarrow \begin{cases} x \geq 1 \\ x \geq 5 \end{cases} \Rightarrow x \geq 5 \Rightarrow D_f = [5, \infty) \quad (\text{الف})$$

6

$$y = \frac{\sqrt{4-2x}}{\sqrt{4x-5}} \quad \begin{matrix} 4-2x \geq 0 \\ 4x-5 \geq 0 \end{matrix} \Rightarrow \begin{cases} x \leq 2 \\ x \geq \frac{5}{4} \end{cases} \Rightarrow \frac{5}{4} \leq x \leq 2 \Rightarrow D_f = \left[\frac{5}{4}, 2\right] \quad (\text{ب})$$

$$y = \sqrt{9x-a} + \sqrt{b-12x} \xrightarrow{x=0} \begin{cases} a=12 \\ b=9 \end{cases} \Rightarrow \frac{b}{a} = \frac{9}{12} = \frac{3}{4}$$

7

مکافاتی که دامنه تابعین در یکسان که معکوس است. یعنی که Δ یکسان باشد. با شرایطی که به ازای هر عضو دامنه معکوس نیز برقرار است.

$$y = \sqrt{\frac{x^2-x-6}{x^2-11x+28}} \quad \begin{matrix} x^2-x-6 \geq 0 \\ x^2-11x+28 > 0 \end{matrix} \Rightarrow \begin{cases} x \leq -2 \text{ or } x \geq 3 \\ x < 4 \text{ or } x > 7 \end{cases} \Rightarrow D_f = (-\infty, -2] \cup (3, 4) \cup (7, \infty)$$

8

$$y = \sqrt{\frac{x^2-2x^2-0x+4}{x^2+2x^2-0x+4}} \rightarrow a+b+c+d=0 \Rightarrow \begin{cases} x \leq -2 \\ x \geq 2 \end{cases} \Rightarrow D_f = (-\infty, -2] \cup [2, \infty)$$

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

9

$$y = \sqrt{2[x]-5} \quad 2[x]-5 \geq 0 \Rightarrow [x] \geq \frac{5}{2} \Rightarrow [x] \geq 3 \Rightarrow D_f = [3, \infty) \quad (\text{ب})$$

$$y = \sqrt{\frac{x+1}{1-x-1}} + \sqrt{\frac{4-x}{x^2+2x+4}} \quad \begin{matrix} x+1 \geq 0 \\ 1-x-1 \geq 0 \\ 4-x \geq 0 \\ x^2+2x+4 \geq 0 \end{matrix} \Rightarrow \begin{cases} x \geq -1 \\ x \leq 0 \\ x \leq 4 \end{cases} \Rightarrow D_f = [-1, 0] \cup [0, 4] = [-1, 4]$$

10

$$y = \sqrt{[x]-4} + \sqrt{1-[x]} \quad \begin{matrix} [x]-4 \geq 0 \\ 1-[x] \geq 0 \end{matrix} \Rightarrow \begin{cases} x \geq 4 \\ x \leq 1 \end{cases} \Rightarrow \emptyset \Rightarrow D_f = \emptyset \quad (\text{ب})$$