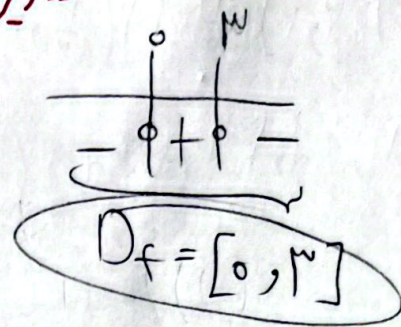


«ایرانی وحید» لاگروه A»

$$x^3 + (x+1) \geq 0 \rightarrow x = 0 \text{ و } 3 \rightarrow \text{در این صورت عبارت فوقی صفر می شود} \rightarrow$$

$$x+1=t \rightarrow x=t-1 \rightarrow f(t) = \left(\frac{1}{t}\right)^t - 1$$

$$f(x) = \left(\frac{1}{x}\right)^x - 1$$

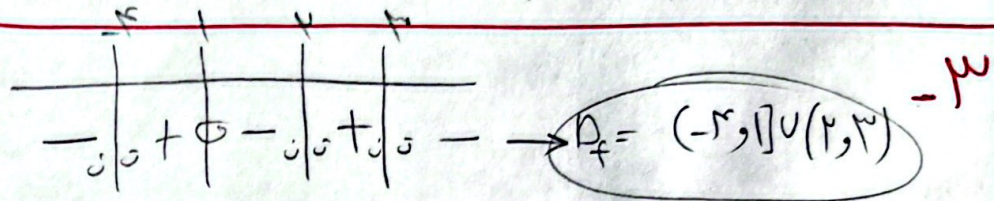


$$f(-x) = \sqrt{x+2-x} \rightarrow 2-x \geq x \rightarrow 2 \geq 2x \rightarrow 1 \geq x = D_{f(-x)}$$

$$2-x \leq -x \rightarrow 2 \leq 0 \times$$

$$f(x) = 0 \rightarrow x = 2, 3, -4$$

$$x-1 = 0 \rightarrow x = 1$$



$$9x^4 - 49x^2 - 29x - 3 = (3x^2 + ax + b)(3x^2 - ax + d)$$

$$9x^4 + (-a^2 + 3(b+d))x^2 + a(d-b)x + bd$$

$$\sqrt{-(a+b)} = 2$$

$$a = -1, b = -3, d = 1$$

$$f(x) \geq f\left(\frac{x}{x}\right) \rightarrow f(x) = f\left(\frac{x}{x}\right) \rightarrow \frac{x^2 + x^2}{x^3} = x + x \rightarrow x = 2$$

$$\frac{x}{x} = t \rightarrow \frac{x}{t} = x \rightarrow f(t) = \frac{x^2}{t^2} + \frac{x}{t} = \frac{x^2 + xt}{t^2}$$

$$D_f = [2, +\infty)$$

$$f(2) \rightarrow 2(1) - 1 = 1 \quad f(10) \rightarrow 2(2) - 1 = 3 \Rightarrow 1 + 3 = 4$$

$$f(x) = x^3 - 12x + 1 + 1 \rightarrow (x-2)^3 + 1 \rightarrow (\sqrt{x})^3 + 1 = 10$$

$$g(x) = x^3 + 9x^2 + 27x + 27 - 27 \rightarrow (x+3)^3 - 27 \Rightarrow \sqrt{x-2} = 3 \Rightarrow x-2 = 9 \Rightarrow x = 11$$

$$g(x) = \sqrt{x-2}\sqrt{x-2} \rightarrow \sqrt{(x-2)-2}\sqrt{x-2+2} + \sqrt{(x-2)+2}\sqrt{x-2+2} = \sqrt{(\sqrt{x-2}-2)^2} + \sqrt{(\sqrt{x-2}+2)^2}$$

$$\frac{1}{\sqrt{x-2}} \leftarrow a + b\sqrt{x+c} \Rightarrow a=0, b=\frac{1}{\sqrt{x-2}}, c=-2$$

$$f(x) = \frac{x+1}{(x-1)(x-3)} \rightarrow D_f = \mathbb{R} - \{1, 3\} \cap D_g \Rightarrow \left\{ \left(2, \frac{1}{\sqrt{x-2}}\right) \mid (0, 6) \right\} = \frac{g}{f}$$

$$\text{الف) } \left\{ (1, 2), (-1, \sqrt{3}), (2, 2), \left(2, \frac{1}{2}\right), \left(1, -\frac{3}{2}\right), \left(\frac{3}{2}, 1\right), \left(\frac{1}{2}, 2\right) \right\} \quad \text{ب) } \left\{ (2, 2), (\sqrt{3}, -1), (1, 2) \right\}$$

$$\text{ج) } \left\{ (1, 2), (1, -2), (3, 1), (-1, 1), (3, 9), (1, 3), (-2, 19) \right\} \quad \text{د) } \left\{ (1, 2), (1, -2) \right\}$$