

$$f(x) = x^4 + 1 + 2x + 9x^3 + 1 - 4x + mx^3 + nx + mn \Rightarrow 10x^3 + mx^3 - 3x + nx + mn$$

چون تابع
تابع است

$$x \text{ با } x \text{ برابرند} \Rightarrow m = -10, n = 4$$

$$m = p+1 \Rightarrow -10 = p+1 \Rightarrow p = -11 \quad -1 = p+k \Rightarrow -1 = -11+k \Rightarrow k = 10$$

$$\Rightarrow m+n+p+k = 5-10+(-11)+10 = -5 \quad \checkmark$$

ریشه‌های صورت = 0

$$f'(x) = 4x^3 - 3 \Rightarrow (x-1)(x+1) \Rightarrow \begin{cases} x^3 = -1 \Rightarrow x = -1 \\ x^3 = 1 \Rightarrow x = 1 \end{cases}$$

$$\Rightarrow \text{عبارت} \geq 0 \Rightarrow \frac{-1}{0} + \frac{1}{0} \Rightarrow D_f = (-1, +\infty) - \{1\} \quad \checkmark$$

$$b) 5-2[-x] \neq 0 \Rightarrow 2[-x] \neq 5 \Rightarrow [-x] \neq 2.5 \Rightarrow x \neq [-2.5, -1]$$

$$\Rightarrow D_f = R - (-2.5, -1) \quad \checkmark$$

$$a) x(x^3-1) \geq 0 \Rightarrow \frac{-1}{-1} + \frac{1}{1} \Rightarrow [1, +\infty) \leftarrow D_f$$

$$|x|+x \geq 0 \Rightarrow \frac{0}{0} + \frac{1}{1}$$

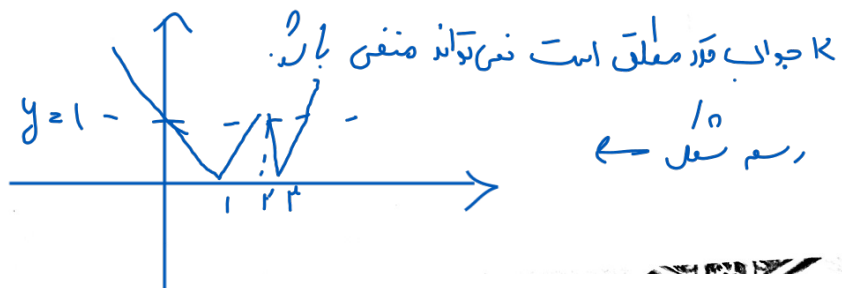
$$b) |x-2|-x^3 \geq 0 \Rightarrow \begin{cases} x \geq 2 \Rightarrow x-2-x^3 \geq 0 \Rightarrow \Delta < 0 \Rightarrow \text{هیچ جوابی ندارد} \Rightarrow \emptyset \\ x < 2 \Rightarrow -x+2-x^3 < 0 \Rightarrow \frac{-2}{-1} + \frac{1}{1} \Rightarrow [-2, 1] \end{cases}$$

$$|x|-1 \neq 0 \Rightarrow x \neq \pm 1 \Rightarrow D_f = [-2, 1] - \{\pm 1\}$$

همه اینها $D_f = [-2, 1] - \{-1\}$

$$||x-2|-1|-k = 0 \Rightarrow ||x-2|-1| = k \Rightarrow \begin{cases} |x-2|-1 = k \Rightarrow |x-2| = k+1 \Rightarrow \begin{cases} x-2 = k+1 \\ x-2 = -k-1 \end{cases} \\ |x-2|-1 = -k \Rightarrow |x-2| = -k+1 \Rightarrow \begin{cases} x-2 = -k+1 \\ x-2 = k-1 \end{cases} \end{cases}$$

$$\begin{cases} x = k+3 \\ x = -k+1 \\ x = -k+3 \\ x = k+1 \end{cases} \Rightarrow k+3 = -k+3 \Rightarrow k = -3$$



$$\int a < -1 \rightarrow n - r + b < n \rightarrow b < r$$

$$\int a < -r \rightarrow n - 1 + b < n \rightarrow b < 1$$

$$a - b < -2$$

میرود



$$x=1 \rightarrow \frac{1-r+r+b+ab}{1+a} = 1 \Rightarrow a-b=ab-1$$

$$x=r \rightarrow \frac{r-1+r+rb+ab}{r+a} = r \Rightarrow rb-ra = -ab+a$$

$$\left. \begin{array}{l} a-b=ab-1 \\ b-a=r \Rightarrow a-b=-r \end{array} \right\} \Rightarrow b-a=r \Rightarrow a-b=-r$$

$$x=0 \rightarrow \frac{-r}{-1} = 0+C \Rightarrow C=r$$

$$x=1 \rightarrow \frac{a+r}{1+b} = 1+r \Rightarrow r+rb=a+r$$

$$x=-1 \rightarrow \frac{-a+r}{-1+b} = -1+r \Rightarrow -1+b=-a+r$$

$$\left. \begin{array}{l} r+rb=a+r \\ -1+b=-a+r \end{array} \right\} \Rightarrow r+rb=r \Rightarrow b=\frac{1}{r}$$

$$\Rightarrow b+C = \boxed{r+a}$$

$$r\sqrt{r-1}a + rk - r - (\sqrt{b-r} + rk) = k \Rightarrow -k-r=k \Rightarrow K=-1$$

$a = \frac{r}{r}$ $b = r$

$$\Rightarrow r - r - (-1) = \boxed{1}$$

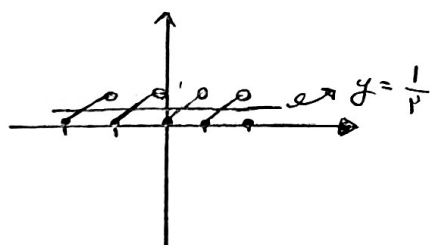
$$D_{g_2} = [-1, +\infty)$$

$$\Rightarrow D_{g_2} = (-\infty, \sqrt{1}] \Rightarrow m-x \geq 0 \Rightarrow m = \sqrt{1}$$

$$f-g(x) = 4\sqrt{1} \Rightarrow \sqrt{1-x} + n = \sqrt{1}$$

$$\Rightarrow 1+n-1\sqrt{1} = 4\sqrt{1} \Rightarrow n = -1+4\sqrt{1}$$

$$\Rightarrow m+n = 1+4\sqrt{1}$$



$\Rightarrow$ جواب $\frac{1}{x}$ $\rightarrow$ جواب $\frac{1}{x}$