

$$x^2 + 1 + 2x + 9x^2 + 1 - 5x + mx^2 + nx + mn = (10+m)x^2 + (n-4)x + (2+mn)$$

تابع ثابت است $\rightarrow m = -10, n = 4$

$$\left. \begin{aligned} (4, -10) &\rightarrow (4, p+1) \rightarrow p+1 = -10 \rightarrow p = -11 \\ (-9, -1) &\rightarrow (-9, p+k) \rightarrow -11+k = -1 \rightarrow k = 10 \end{aligned} \right\} m+n+p+k = -7$$

الف) $\frac{x-2}{x^2-2x-1} \geq 0 \rightarrow \frac{(x-2) \rightarrow 2}{(x-4)(x+2) \rightarrow -2, 2} \rightarrow \begin{array}{c|c} -2 & 2 \\ \hline -4 & + \end{array}$ $D_f = (-2, 2) \cup (2, +\infty)$

ب) $4-2[-x] \neq 0 \rightarrow 4 \neq 2[-x] \rightarrow 2 \neq [-x] \rightarrow x \neq [-3, -2]$

$D_f = \mathbb{R} - (-3, -2]$

الف) $\sqrt{|x|+x} > 0 \rightarrow x \in (0, +\infty) \rightarrow D_f = (0, +\infty)$

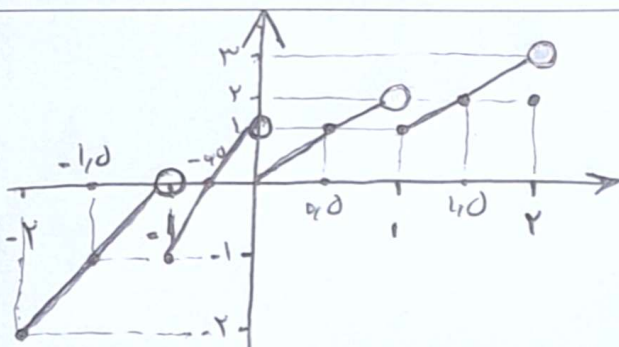
$\sqrt{x(x-1)} \geq 0 \rightarrow \begin{array}{c|c} -1 & 0 & 1 \\ \hline -1 & -1 & - \end{array} \rightarrow x \in (1, +\infty) \uparrow$

ب) $\left. \begin{aligned} |x-2| - x^2 \geq 0 &\rightarrow x \in [-2, 1] \\ |x|-1 \neq 0 &\rightarrow |x| \neq 1 \rightarrow x \neq \pm 1 \end{aligned} \right\} D_f = [-2, 1) - \{-1\}$

$||x-2|-1| - k = 0 \rightarrow ||x-2|-1| = k \rightarrow ||x-2|-1| = |n-1| = k$

$n=2 \rightarrow |x-2|=2 \rightarrow \begin{cases} x=4 \\ x=0 \end{cases} \rightarrow k=1$

$\hookrightarrow 0 \rightarrow x=2$



$$x^r - r x + r = 0 \rightarrow x \begin{cases} x=1 \rightarrow \frac{0}{1+a} + b = 1 \rightarrow b=1 \\ x=r \rightarrow \frac{r}{r+a} + 1 = r \rightarrow \frac{r}{r+a} = r \rightarrow a = -r \\ x=r \rightarrow \frac{0}{1+a} + b = r \rightarrow b=r \\ x=r \rightarrow \frac{r}{r+a} + r = r \rightarrow a = -1 \end{cases}$$

$a-b = \begin{matrix} \downarrow & \downarrow \\ -r & -r \end{matrix}$

$$x=0 \rightarrow \frac{-r}{-1} = c = r \quad b+c = r + \frac{1}{r} = \frac{d}{r} = (r, d)$$

$$\begin{aligned} x=1 &\rightarrow \frac{a+r}{b+1} = r \\ x=-1 &\rightarrow \frac{r-a}{b-1} = 1 \end{aligned} \quad \left. \begin{array}{l} + \\ - \end{array} \right\} \frac{rb-ra}{b^2-1} = r \rightarrow -a = rb - rb - r$$

$$\frac{r+rb^2-rb-r}{b-1} = 1 \rightarrow rb^2 - rb + 1 = 0 \rightarrow \begin{cases} b=1 \\ b=\frac{1}{r} \end{cases}$$

$$\begin{cases} m-x \geq 0 \rightarrow x \leq m \\ r x + r \geq 0 \rightarrow x \geq -1 \end{cases} \rightarrow D = [-1, r] \rightarrow m = r$$

$$f(r) - g(r) = 2\sqrt{r} \rightarrow \sqrt{r+n} - \sqrt{r} = 2\sqrt{r} \rightarrow n = 4\sqrt{r} - r$$

$$m+n = 4\sqrt{r} - r + r = 4\sqrt{r} = d$$

$$x - [x] = \frac{1}{r}$$

$$x = \frac{r}{r}, \frac{1}{r}, -\frac{1}{r}, -\frac{r}{r}$$

