

$$f(x) = x^2 + 2x + 1 + 9x^2 - 6x + 1 + mx^2 + nx + mn \rightarrow 10x^2 - 4x + 2 + mx^2 + nx + mn$$

$$\text{ب) } f(x) = k \rightarrow 0 = 2 \text{ ضرب} \Rightarrow m = -10, n = 4$$

$$g(x), (4, -10) \Rightarrow (4, p+1) \Rightarrow p+1 = -10 \Rightarrow p = -11 \quad (-9, -1) \Rightarrow (-9, p+k)$$

$$\Rightarrow -11 + k = -1 \Rightarrow k = 10 \quad m+n+p+k = -10+4-11+10 = -7$$

$$\text{الف) } \frac{x^2 - 2}{x^2 - 2x - 1} > 0 \Rightarrow P_f: (-1, 2) \cup (2, +\infty)$$

$$x^2 - 2x - 1 \xrightarrow{x^2=t} t^2 - 2t - 1 = 0 \quad (+-4)(t+2)$$

$$x^2 = 4 \xrightarrow{+2} x = 2 \quad x^2 = -2 \xrightarrow{-2} x = -2$$

$$\text{ب) } 4 - 2[-x] \neq 0$$

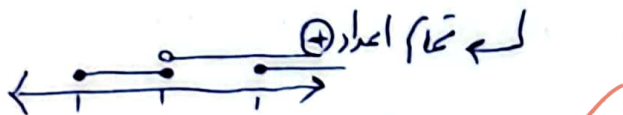
$$\rightarrow -2[-x] = -4 \rightarrow [-x] = 2$$

$$2 \leq -x < 3 \rightarrow -2 \geq x > -3 \text{ نباشد}$$

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

$$\text{الف) } x(x+1)(x-1) > 0 \quad \frac{-1}{-1+1-1} + \frac{1}{-1+1-1}$$

$$|x| + x > 0 \rightarrow |x| > -x$$



$$\Rightarrow P_f = [1, +\infty)$$

$$\text{ب) }$$

$$|x-2| - x^2 > 0 \rightarrow |x-2| \geq x^2$$

$$\textcircled{1} x-2 \geq x^2 \rightarrow -x^2 + x - 2 > 0 \rightarrow X$$

$$\textcircled{2} x-2 \leq -x^2 \rightarrow x^2 + x - 2 \leq 0$$

$$|x| \neq 1 \rightarrow x \neq \pm 1 \quad \frac{-1}{-1+1-1} + \frac{1}{-1+1-1}$$

$$P_g = [-2, -1) \cup (-1, 1)$$

$$||x-2|-1| - k \neq 0 \rightarrow ||x-2|-1| \neq k \quad x-2 \neq 1 \rightarrow x \neq 3 \quad X$$

$$\textcircled{1} k < 0 \rightarrow \text{همیشه بقرار} \rightarrow X$$

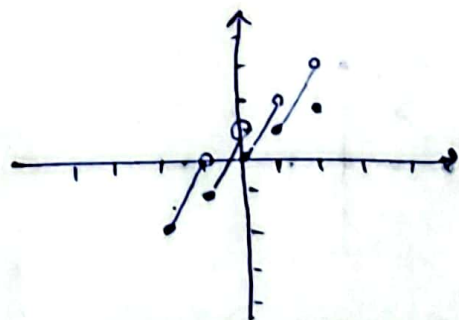
$$\textcircled{2} k = 0 \rightarrow |x-2|-1 \neq 0 \rightarrow |x-2| \neq 1 \rightarrow x-2 \neq \pm 1 \rightarrow x \neq 1, 3$$

$$\textcircled{3} k > 0 \rightarrow ||x-2|-1| = k \xrightarrow{\textcircled{1}} |x-2|-1 = -k \xrightarrow{\textcircled{2}} x-2 = -k+1 \Rightarrow x = \boxed{k+2}$$

$$|x-2|-1 = k \xrightarrow{\textcircled{1}} x-2 = k+1 \Rightarrow x = \boxed{k+3} \quad \textcircled{2} x-2 = k-1 \Rightarrow x = \boxed{k+1}$$

$$[-2, 2]$$

$-2 \leq x < -1$	$\frac{[x]}{[x]} = -1$	$y = 2x + 2$	$\frac{-2}{-1} = 2$
$-1 \leq x < 0$	$\frac{[x]}{[x]} = -1$	$y = 2x + 1$	$\frac{-1}{-1} = 1$
$0 \leq x < 1$	$\frac{[x]}{[x]} = 0$	$y = 2x$	$\frac{0}{0} = 0$
$1 \leq x < 2$	$\frac{[x]}{[x]} = 1$	$y = 2x - 1$	$\frac{1}{1} = 1$
$2 \leq x$	$\frac{[x]}{[x]} = 2$	$y = 2x - 2$	$\frac{2}{2} = 1$



$$\frac{(a-1)(a-c)}{(a+a)} = a-b \xrightarrow{a=-1} b=3 \rightarrow a-b=-4 \checkmark$$

$$\searrow a=-3 \quad b=1 \rightarrow a-b=-4 \checkmark$$

$$k \neq \pm 1 \rightarrow \text{عمر و عمر} \rightarrow a^2 - 2a^2 - a - 2 \div a^2 - 1 = \frac{a-2}{c-2} \checkmark$$

$$\frac{a+2}{a+b} \cdot \frac{a+2}{a+b} \Rightarrow \text{① } 2 = \frac{a+2}{1+b} \Rightarrow a+2 = 2+b$$

$$\rightarrow b=1/2, c+b = \frac{2}{2} = 1, \text{② } 1 = \frac{-a+2}{-1+b} = \frac{-a+2}{-1+1/2} = \frac{-a+2}{-1/2} = -2(-a+2) = 2a-4$$

$$c=2, 2a-4=1 \Rightarrow 2a=5 \Rightarrow a=5/2$$

$$2\sqrt{a-c} + 2k-2 \rightarrow 2a-2a \geq 0 \rightarrow 2a \geq 2a$$

$$g|_K \rightarrow \sqrt{b-2} = -2k, b-2 \geq 0 \rightarrow b \geq 2$$

$$b=2a \rightarrow 2a - \frac{b}{2} - k = b - \frac{b}{2} + \frac{\sqrt{b-2}}{2}$$

$$K = \frac{\sqrt{b-2}}{-2} \quad 2b - b + \sqrt{b-2} = b + \sqrt{b-2}$$

$$2k-2 - 2k = -2 \rightarrow k = -1$$

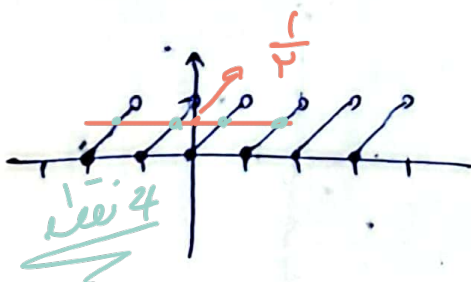
$$m-2 \geq 0 \rightarrow m \geq 2$$

$$2a+2 \geq 0 \rightarrow 2a \geq -2 \rightarrow a \geq -1$$

$$\sqrt{m-2} + n = \sqrt{2} \Rightarrow \sqrt{m-2} + n = \sqrt{2}$$

$$2+2 - 2\sqrt{2} = 2\sqrt{2} \quad n+m = \sqrt{2} + 0$$

$$y = a - [a] = 1/2 \quad a - [a] \Rightarrow \text{جواب صحیح} \rightarrow [0, 1)$$



$$\Rightarrow a = k + 0,5$$

$$k \in \mathbb{Z}$$