

$$n^2 + 2n + 1 + 9n^2 - 4n + 1 + mn^2 + n + mn = f(n) \Rightarrow 10n^2 + mn^2 - 4n + n + 1 + mn$$

$$m = -10 \text{ و } n = 5 \Rightarrow f(n) = -31$$

$$g(n) = \sqrt{(4, -10), (4, p+1), (p+4, -1), (-4, p+k)}^2$$

$$-10 \Rightarrow p = -11$$

$$m + n + p + k = -10 + 5 + (-11) + 4 = -12$$

$$-1 = -11 + k \Rightarrow k = 10$$

الف) $\frac{n-2}{n^2-2n^2+1} \geq 0$

$$\frac{-1}{-1+1} + \frac{2}{1} \Rightarrow D_f = (2, +\infty) \cup (-\infty, -1]$$

$$(n^2-2)(n+2)(n^2+2)$$

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

$$4-2 \leq n \leq 5 \neq 0 \Rightarrow 2-n \leq 5 \Rightarrow 2 \leq n \leq 7 \Rightarrow -3 \leq n \leq 2$$

الف) $n(n^2-1) \geq 0$

$$\frac{-1}{-1+1} + \frac{1}{1} \Rightarrow D_f = [1, +\infty)$$

$$|n| + n > 0 \Rightarrow (0, +\infty)$$

ب) $|n-2| - n^2 \geq 0$

$$\begin{cases} n > 2 \text{ و } -n^2 + n - 2 \geq 0 \Rightarrow \text{مطلوبه نیست} \\ n \leq 2 \text{ و } -n^2 - n + 2 \geq 0 \Rightarrow -2 \leq n \leq 1 \end{cases}$$

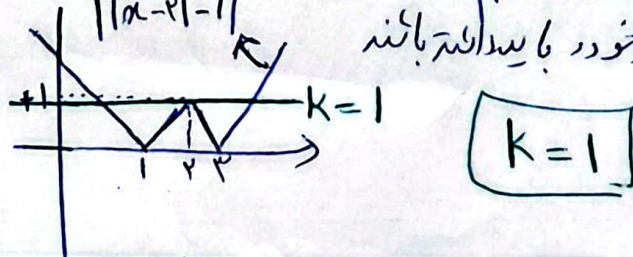
$$|n| - 1 \neq 0 \Rightarrow n \neq \pm 1$$

$$(n-1)(n+1)$$

$$D_f = [-2, 2] \cup [-1, 1]$$

$$y = \frac{1}{|n-2|-1-k} \Rightarrow \frac{|n-2|-1}{|n-2|-1-k} \neq 0 \Rightarrow |n-2|-1 \neq k$$

که به خود با مساوی باشد



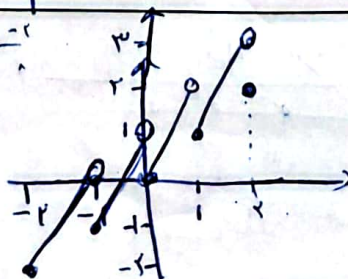
$-2 \leq n < -1 \Rightarrow y = 2n + 2 - \frac{1}{1}$

$-1 < n < 0 \Rightarrow y = 2n + 1 - \frac{1}{1}$

$0 < n < 1 \Rightarrow y = 2n - \frac{1}{1}$

$1 < n < 2 \Rightarrow y = 2n - 1 - \frac{1}{1}$

$n = 2 \Rightarrow y = 2$



$$y = \frac{(x-1)(x-3)}{x+a} + b$$

$$(1, 1) \Rightarrow y = 0 + b = 1 \Rightarrow b = 1$$

$$(2, 2) \Rightarrow \frac{-1}{2+a} + 1 = 2 \Rightarrow a = -3 \Rightarrow a-b = -4$$

$$f(x) \left\{ \begin{array}{l} \frac{x^2 + 2x^2 - x - 2}{x^2 - 1} = \frac{(x^2 - 1)(x+2)}{x^2 - 1} = x+2 \quad x \neq \pm 1 \\ \frac{ax+b}{x+b} = \frac{\frac{1}{x}x+b}{x+\frac{1}{x}} \end{array} \right.$$

$$(-1, 1) \Rightarrow \frac{-a+1}{-1+b} = 1 \Rightarrow b+a = 2$$

$$g(x) = x+2 \Rightarrow c = 2$$

$$(1, 2) \Rightarrow \frac{a+b}{1+b} = 2 \Rightarrow 2b-a = -1$$

$$b+c = \frac{1}{2} + \frac{3}{2} = \boxed{\frac{4}{2}}$$

$$a = \frac{1}{2}, b = \frac{1}{2}$$

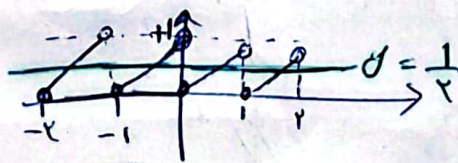
$$D_g \Rightarrow x \geq -1 \quad g = \sqrt{x+2} \quad f = \sqrt{2-x} + x$$

$$D_f \Rightarrow x \leq 2 \Rightarrow m = 2$$

$$f(x) - g(x) = 2 + x - 2\sqrt{2} = 4\sqrt{2} \Rightarrow x = 4\sqrt{2} - 2$$

$$m+x = 4\sqrt{2} + 2$$

$$y = x - [x] = \frac{1}{2}$$



جواب دارد.