

$$f(x) = (x+1)^2 + (3x-1)^2 + mx^2 + nx + mn \Rightarrow x^2 + 2x + 1 + 9x^2 - 6x + 1 + mx^2 + nx + mn$$

$$(m+10)x^2 + (n-4)x + mn + 2 \Rightarrow m = -10, n = 4$$

$$g(x) = \left\{ (4, m), (n, p+1), (p+2, -1), (-9, p+k) \right\} \Rightarrow p+1 = -1 \Rightarrow p = -2$$

$$K_n = 10 \Rightarrow m+n+p+k = 4-10-2 = -8 \quad \checkmark$$

الف) $\sqrt{\frac{x-2}{x^2-2x-1}} \Rightarrow \sqrt{\frac{x-2}{(x^2-4)(x+1)}} \Rightarrow \sqrt{\frac{x-2}{(x-2)(x+2)(x+1)}} \Rightarrow \sqrt{\frac{1}{(x+2)(x+1)}}$

ب) $f(x) = \frac{2x^2+1}{x-2[-x]} \Rightarrow x-2[-x] \neq 0 \Rightarrow x \neq -2[-x] \Rightarrow x \neq -2x$

$$\Rightarrow x \neq -x \Rightarrow x \neq 0 \Rightarrow \mathbb{R} - \{0\} \quad \checkmark$$

$f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}} \Rightarrow \text{I} \Rightarrow x+|x| > 0 \Rightarrow (0, +\infty), x \neq 0$

$\text{II} \Rightarrow x(x^2-1) \geq 0 \Rightarrow x \in [-1, 0] \cup [1, +\infty)$

$\text{I} \cap \text{II} \Rightarrow [1, +\infty) \quad \checkmark$

ب) $\sqrt{\frac{|x-2|-x^2}{|x|-1}} \Rightarrow \text{II} \Rightarrow |x-2|-x^2 \geq 0 \Rightarrow \begin{cases} x^2 - x + 2 \leq 0 \rightarrow \text{همواره مثبت است} \\ x^2 + x - 2 \leq 0 \rightarrow x \in [-2, 1] \end{cases}$

$\text{I} \Rightarrow |x| \neq 1 \Rightarrow x \neq \pm 1$

$\Rightarrow D_f = [-2, -1) \cup (1, 1] \quad \checkmark$

$y = \frac{1}{||x-2|-1|-k} \Rightarrow ||x-2|-1|-k \neq 0 \rightarrow$ جواب ۳

لیست مثلث های ک با بر این است

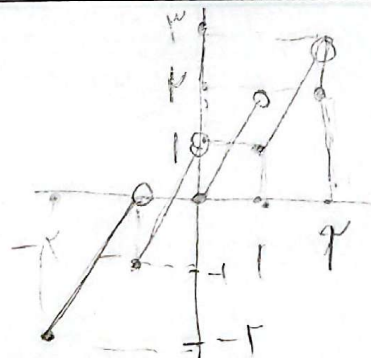
مخرج مادر ۳ نقطه جواب برآورد است

$|k|=1 \quad \checkmark$

$y = 2x - [x] \Rightarrow [-2, -1) \Rightarrow 2x$

$(-1, 0) \Rightarrow 2x+1$

ضایحه ها و بازه ها، کامل بنویس!



$$f(x) = \frac{x^r - rx + r^2}{x+a} + b \Rightarrow \frac{x^r + (b-r)x + r^2 + ab}{x+a} \quad \left| \begin{array}{l} x+a \\ x- \\ (b+r) \end{array} \right|$$

$$\Rightarrow x - (b+r+a) \Rightarrow x - (a-b+r) = x \quad \left\{ \begin{array}{l} a = -r \rightarrow x-1 + b < x \rightarrow b < 1 \\ a < -1 \rightarrow x-r + b < x \rightarrow b < r \end{array} \right.$$

$$\Rightarrow a-b+r=0 \Rightarrow \boxed{a-b=-r} \quad \checkmark$$

$$f(x) = \begin{cases} \frac{x^r + rx^r - a - r}{x^r - 1} ; x \neq \pm 1 \Rightarrow x=0 \Rightarrow f(0)=r \\ \frac{ax+r}{x+b} ; x = \pm 1 \end{cases} \Rightarrow g(0)=c \Rightarrow \boxed{c=2} \quad \checkmark$$

$$g(x) = x+c \quad \left\{ \begin{array}{l} C+b=r+\frac{1}{2} \\ \neq \frac{0}{r} \end{array} \right. \quad \checkmark$$

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

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

$$f(x) = \sqrt{rx - ra} + k - 1 \Rightarrow f - g = \{(1, k)\} \quad \left\{ \begin{array}{l} \frac{ra-b}{r} - k \\ \frac{r-k+1}{r} \end{array} \right. \quad \checkmark$$

$$g(x) = \sqrt{b - rx} + rk \quad \checkmark$$

$$\Rightarrow r\sqrt{r-ra} + rk - 1 - \sqrt{b-r} - rk = k \Rightarrow rk = -r \Rightarrow \boxed{k = -1} \quad \checkmark$$

$$f(x) = \sqrt{m-x} + n \Rightarrow f(x) = \sqrt{v-m+x} \quad f-g(x) = 4\sqrt{r} \quad \rightarrow n = \pm r + \lambda\sqrt{r}$$

$$g(x) = \sqrt{rx+r} \Rightarrow D_g = [-1, +\infty) \quad \rightarrow r+n - r\sqrt{r} = 4\sqrt{r} \quad \rightarrow m = v$$

$$D_{f \times g} = [-1, v] \quad \Rightarrow D_f = (-\infty, 7]$$

$$\Rightarrow m+n = 5 + \lambda\sqrt{r} \quad \checkmark$$

$$y = (-1)^r (x - [x]) \Rightarrow x - [x]$$

$$y = \frac{1}{2} \Rightarrow \text{جواب } r \quad \checkmark$$

