

باید از مخرج صفر نشود

بدرستی جواب بدهیم

۱۹, ۲۵

$$y = \sqrt{f(x) - x + 1}$$

$$f(x) = \begin{cases} 2x-1 & [x] \geq 1 \\ 2x+2 & [x] \leq 0 \end{cases}$$

$[x] \geq 1 \Rightarrow x \geq 1 \Rightarrow 2x-1 \geq 1$
 $\Rightarrow 2x-1 \geq 1$
 $\Rightarrow 2x \geq 2 \Rightarrow x \geq 1$

$x < 0$: $2x+2-x+1 = x+3 \geq 0 \Rightarrow x \geq -3$
 $x \geq 0$: $2x-1-x+1 = x \geq 0 \Rightarrow x \geq 0$
 Domain: $-3 \leq x < 0$ and $x \geq 0$

$$D_f = [-3, +\infty)$$

صفتی آفر...

تابع را در کسری و در مخرج آن را بیابید

$$y = \frac{2x^2 + 2x + 1}{(x^2 + 2x + 1)^2} = \frac{2(x^2 + 1) + 2x}{(x^2 + 1)^2} = \frac{2(x^2 + 1)}{(x^2 + 1)^2} = \frac{2}{x^2 + 1}$$

$D = \mathbb{R}$

$$D_f = \mathbb{R} - \left\{ \frac{1}{\sqrt{2}} \right\} = \mathbb{R} - \left\{ \frac{1}{\sqrt{2}} \right\}$$

$$f(x) = \begin{cases} \frac{x^2 + 2x^2 - x - 2}{x^2 - 1} & ; x \neq \pm 1 \\ \frac{ax + 2}{x + b} & ; x = \pm 1 \end{cases}$$

$x^2(x+2) - 1(x+2) = (x+2)(x^2-1)$
 $g(x) = x + c$
 $g(x) = f(x)$
 $D_f = D_g$

$b+c = ?$
 $2 + \frac{1}{b}$
 $c = \frac{1}{b}$
 $= 2b = \frac{1}{b}$

باید مخرج صفر نشود

$$x \neq \pm 1 \Rightarrow x+2 = x+c \Rightarrow c=2$$

$x=+1 \Rightarrow g(x) = 1+2 = 3 = \frac{ax+2}{x+b} \Rightarrow 3 = \frac{a+2}{1+b} \Rightarrow 3b+1 = a$
 $x=-1 \Rightarrow g(x) = -1+2 = 1 = \frac{-a+2}{-1+b} \Rightarrow b-1 = 2-a$

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

$$\Rightarrow 2b = 1 \Rightarrow b = \frac{1}{2}$$

برای حل این مسئله

(E)

(r)

$$f(x) + g(x)$$

$$f(x) = \frac{x+1}{x-c}$$

$$c=1$$

$$g(x) = \frac{(x+1)(x-1)}{x^2+ax+b}$$

معادله 2، 3

$$Df = Dg$$

$$(x-c)^2 = x^2 - 2cx + c^2 = x^2 - 2cx + b \Rightarrow \begin{cases} a = -2c \\ b = c^2 \end{cases}$$

$$\frac{(x+1)(x-1)}{x^2-1}$$

$$\frac{x^2-1}{x^2+ax+b} = \frac{x+1}{x-c} \Rightarrow x^2+ax+b = (x+1)(x-c)$$

$$\begin{cases} (x-1)^2 = x^2 - 2x + 1 \\ x^2+ax+b \end{cases} \Rightarrow \begin{cases} b=1 \\ a=-2 \end{cases} \text{ و } b=c^2=1=c^2 \Rightarrow c=\pm 1$$

$$a+b+c = -2+1+1 = 0$$

$$\Rightarrow c = \pm 1$$

$$f(x) = (x-1)^2(x-1)$$

$$g(x) = f(x+1) + f(1-x)$$

$$\Rightarrow f(x+1) = (x+1-1)^2(x+1-1) = x(x-1)^2$$

$$\begin{aligned} &= x(x-1)^2 + (x+1)^2(-x) \\ &= x(x^2-2x+1) + (x^2+2x+1)(-x) \\ &= x^3-2x^2+x - x^3-2x^2-x-1 \\ &= -4x^2-1 \end{aligned}$$

$$f(1-x) = (1-x-1)^2(1-x-1) = (-x)^2(-x) = -x^3$$

$$f(x) + f(-1) = 1+2=3$$

$$f(x) = \begin{cases} \sqrt{x}+1 & x \leq 0 \\ \sqrt{x} & x > 0 \end{cases}$$

$$f(x) = \sqrt{x}+1$$

$$f(x) \Rightarrow 1-2x = 1 \Rightarrow 2x = 0 \Rightarrow x = 0 \Rightarrow f(0) = \sqrt{0}+1 = 1$$

$$f(-1) \Rightarrow 1-2x = -1 \Rightarrow 2x = 2 \Rightarrow x = 1 \Rightarrow f(1) = \sqrt{1} = 1$$

به نام خداوند دانش

$$f(x+\sqrt{x}) = x^2 + 3x = (x)^2 + 3(x) - 2\sqrt{x} + 1 = \boxed{241} \checkmark$$

$$f(4) \Rightarrow 4 + \sqrt{4} = 4 \Rightarrow 4 = 4 \checkmark$$

(2) (✓)

$$f(x) = x^2 + x \Rightarrow f(\overset{+}{x-1}) + f(\overset{-}{1-x}) = 0 \checkmark$$

$$\Rightarrow f^+ + f^- - t^2 - t = 0$$

(2) (1)

$$\Rightarrow f(x-1) = (x-1)^2 + (x-1) = x^2 - 2x + 1 + x - 1 = x^2 - x$$

$$\Rightarrow f(1-x) = (1-x)^2 + (1-x) = 1 - 2x + x^2 + 1 - x = x^2 - 3x + 2$$

$$\left. \begin{array}{l} x^2 - x \\ x^2 - 3x + 2 \end{array} \right\} \oplus$$

2. b. h. f. n.

$$D_g: b - \varepsilon \geq 1 \Rightarrow \frac{b}{\varepsilon} \geq \frac{1}{\varepsilon}$$

$$D_f: \varepsilon - \frac{1}{a} \geq 0 \Rightarrow \frac{1}{a} \leq \varepsilon$$

$$D_f \cap D_g = \emptyset$$

$$\Rightarrow \frac{b}{\varepsilon} = 1 \Rightarrow \boxed{b = \varepsilon} \text{ , } \frac{1}{a} = 1 \Rightarrow \boxed{a = \frac{1}{1}} \checkmark$$

$$1 - \frac{b}{\varepsilon} - k = 1 - \frac{\varepsilon}{\varepsilon} - k = 1 - 1 - k = -k = \boxed{1} \checkmark$$

$$f(\infty): \sqrt{\varepsilon - \varepsilon} + k - 1 \Rightarrow \boxed{f(1) = k - 1} \Rightarrow 1f - g = 1k - 1 - 1k = \boxed{-k - 1} = k$$

$$g(\infty): \sqrt{\varepsilon - \varepsilon} + 1k \Rightarrow g(1) = 1k$$

$$\Rightarrow \frac{1k = -1}{\boxed{k = -1}} \checkmark$$

بنا/مناصه

$$Df \cap Dg = [-1, 1]$$

$$Dg = \{x + y \mid x \geq -1\}$$

$$\Rightarrow Df: x \leq 1$$

ل
لوا

$$Df: m - x \geq 0 \Rightarrow m \geq x = \boxed{m \geq 1}$$

$$f(x): \sqrt{1-x} + x = \sqrt{1-x} + x = \boxed{1+x}$$

$$g(x): \sqrt{x} + x = \sqrt{x}$$

$$m + n = 1 + \sqrt{x} + x = \boxed{1 + \sqrt{x}} \quad \boxed{1 + \sqrt{x}}$$

$$f - g = \boxed{1+x} - \sqrt{x} = 1 + x - \sqrt{x}$$

$$n = \sqrt{x} + x$$

$$f(x) = \begin{cases} x-1 & x \geq 0 \\ x+1 & x < 0 \end{cases}$$

-1

$$\begin{cases} x \geq 0 \rightarrow y = \sqrt{x-1-x+1} \rightarrow y = \sqrt{x} & x \geq 0 \xrightarrow{0} x \geq 0 \\ x < 0 \rightarrow y = \sqrt{x+1-x+1} \rightarrow y = \sqrt{x+1} & x \geq -\frac{1}{2} \xrightarrow{0} -\frac{1}{2} \leq x \leq 0 \end{cases}$$

$$D_y = \left[-\frac{1}{2}, +\infty\right)$$