

نام و خانوادگی ... اسید جیسید ... پاسنامہ تشریحی تکلیف شماره ... کلاس ...

$f(x) = \begin{cases} x-1 & [x] \geq 2 \\ x+3 & [x] < 2 \end{cases}$
 $f(x) - x + 1 \geq 0$

$5 < x < 7 \rightarrow x-1-x+1 = 0 \rightarrow x \geq 0 \rightarrow [5, 7)$

$x < 5 \rightarrow x+3-x+1 = 4 \geq 0 \rightarrow x \geq -\frac{4}{1} \rightarrow [-\frac{4}{1}, 5)$

$D_f = [-\frac{4}{1}, 7)$

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$y = \frac{5x^3 + 4x^2 + 11x + 3}{(x^2 + x + 1)^2} \Rightarrow ((x + \frac{1}{2})(x + \frac{1}{2}))^2 \rightarrow (x + \frac{1}{2})^2$

$\Delta = 0 \rightarrow$

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

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

$g(x) = x + c$

$f(x) = g(x) \Rightarrow x = x + c \rightarrow c = 0$

$f(1) = \frac{a+c}{1+b} = 1 \rightarrow \begin{cases} a=1 \\ b=-1 \end{cases}$

$b+c = -1 = 0$

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

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

$(x-1)(x-c) = x^2 - (1+c)x + c = x^2 + ax + b$

$b = c$

$a = -1 - c \rightarrow a + c = -1$

$1 + a + b = 0 \rightarrow a + b = -1$

$a + b + c = 0$

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

$f(x+1) = (x+1-3)^2(x+1-1) = (x-2)^2 x = (x^2 - 4x + 4)x = x^3 - 4x^2 + 4x$

$f(1-x) = (1-x-3)^2(1-x-1) = (-x-2)^2(-x) = (x^2 + 4x + 4)(-x) = -x^3 - 4x^2 - 4x$

$g(x) = x^3 - 4x^2 + 4x - x^3 - 4x^2 - 4x = -8x^2 \rightarrow g(x) = -8x^2$

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$$f(1-x) = \begin{cases} \sqrt[3]{x} + c & x \leq 0 \\ x\sqrt{x} & x > 0 \end{cases}$$

$$f(-1) + f(1) = 1 + 1 = 2 \quad \text{جواب}$$

$$1-x = -1 \rightarrow x = c \rightarrow x = 1 \rightarrow x\sqrt{x} = 1 \quad \checkmark$$

$$1-x = 1 \rightarrow -x = c \rightarrow x = -1 \rightarrow \sqrt[3]{x} + c = -1 + c = 1 \quad \checkmark$$

$$f(x + \sqrt{x}) = x^2 + 3x \quad f(4) = ?$$

$$x + \sqrt{x} = 4 \rightarrow x = 4 \rightarrow 4^2 + 3 \cdot 4 = 16 + 12 = 28 \quad \checkmark$$

$$f(x) = x^3 + x$$

$$f(x-1) + f(1-x) = 0 \quad \text{جواب}$$

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

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

$$f(x) = \sqrt{2x - 3a} + k - 1$$

$$g(x) = \sqrt{b - 2x} + 3k \rightarrow \text{جواب}$$

$$2f - g = \{(1-k)\} \rightarrow 2\sqrt{2x - 3a} + 2k - 2 - \sqrt{b - 2x} - 3k = k \quad \text{صغیر اخذ}$$

$$\begin{cases} 2\sqrt{2x - 3a} - \sqrt{b - 2x} - k = 2 \\ \sqrt{2x - 3a} - \frac{\sqrt{b - 2x}}{2} - k = 1 \end{cases} \quad \begin{cases} 2x - 3a \geq 0 \rightarrow x \geq \frac{3a}{2} \\ b - 2x \geq 0 \rightarrow x \leq \frac{b}{2} \end{cases}$$

$$f(x) = \sqrt{m - x} + n$$

$$D_{f \times g} = [-1, 5]$$

$$m + n = 5$$

$$g(x) = \sqrt{2x + c}$$

$$f - g(x) = 4\sqrt{c}$$

$$2x + c \geq 0 \quad x \geq -1$$

$$m - a \geq 0 \rightarrow x \leq m \rightarrow m = 5 \quad \checkmark$$

$$f - 2\sqrt{c} = 4\sqrt{c} \rightarrow f(x) = 6\sqrt{c} \quad \checkmark$$

$$f(x) = \sqrt{x} + n = 6\sqrt{c} \quad \checkmark$$

$$m + n = 5 + 6\sqrt{c} - c = 11 \quad \checkmark$$

$$f(n) = \begin{cases} r_{n-1} & n \geq \omega \\ r_{n+r} & n < \omega \end{cases}$$

-1

$$\begin{cases} n \geq \omega \rightarrow y = \sqrt{r_{n-1} - n + 1} \rightarrow y = \sqrt{n} & n \geq 0 \xrightarrow{n} n \geq \omega \\ n < \omega \rightarrow y = \sqrt{r_{n+r} - n + 1} \rightarrow y = \sqrt{r_{n+r}} & n \geq -\frac{r}{r} \xrightarrow{n} -\frac{r}{r} \leq n \leq \omega \end{cases}$$

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

-2

$$y = \frac{r(1n^r + 1r_{n+r} + 4n + 1)}{(r_{n+1})^r} = \frac{r(r_{n+1})^r}{(r_{n+1})^r} = \frac{r}{r_{n+1}}$$

$$\Rightarrow D_y = \mathbb{R} - \left\{-\frac{1}{r}\right\}$$

(2) ضابطه های بیساز

$$f(n) = \begin{cases} \frac{(n-1)(n^r + r_{n+r})}{(n-1)(n+1)} = n + r \\ \frac{an + r}{n + b} \end{cases}$$

$$f(1) = \frac{a+r}{1+b} = r \rightarrow a - rb = 1$$

$$f(-1) = \frac{-a+r}{-1+b} = 1 \rightarrow a + b = r$$

3- برای تساوی روابط (1) دامنه های برابر

$$n \neq \pm 1 \Rightarrow C = r$$

$$n = \pm 1$$

مقدار تابع در $n = \pm 1$ باید در روابط f و g برابر باشند:

$$\left\{ \begin{array}{l} \rightarrow a = r, \omega, b = 0, \omega \rightarrow b + C = r, \omega \end{array} \right.$$

$$D_f = \mathbb{R} - \{c\}$$

۴- چون دو تابع با هم برابرند دامنه‌های برابر داشته‌اند:

یعنی g در خارج ریشه ضعیف داشته:

$$u^r + au + b = (u - c)^r = u^r - rcu + c^r \rightarrow \begin{cases} a = -rc \\ b = c^r \end{cases}$$

$$g(u) = f(u) \rightarrow$$

همچنین ضابطه‌های c / u دارند:

$$\frac{u^r - 1}{u^r + au + b} = \frac{u+1}{u-c} \rightarrow \frac{(u-1)(\cancel{u+1})}{(u-c)^r} = \frac{\cancel{u+1}}{\cancel{u-c}} \rightarrow \begin{cases} c = 1 \\ a = -2 \\ b = 1 \end{cases} \text{ جواب: } \boxed{5}$$

۹- اشتراک دامنه f و g فقط $u=1$ است یعنی:

$$D_f = \left[\frac{r_a}{r}, +\infty\right) \quad D_g = \left(-\infty, \frac{b}{r}\right] \xrightarrow{\cap} \{1\}$$

$$\frac{r_a}{r} = \frac{b}{r} = 1 \rightarrow a = \frac{r}{r} \quad b = r$$

$$rf(1) - g(1) = K \rightarrow 2K - r - rK = K \rightarrow K = -1$$

$$r_a - \frac{b}{r} = K = \boxed{3}$$

$$D_f = (-\infty, m]$$

$$\Rightarrow D_{f \times g} = [-1, v] \rightarrow \boxed{m = v}$$

$$D_g = [-1, +\infty)$$

$$(f-g)(r) = r + n - 2\sqrt{r} = 4\sqrt{r} \rightarrow \boxed{n = 8\sqrt{r} - 2}$$

$$m + n = \boxed{8\sqrt{r} + 5}$$

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