

نام و نام خانوادگی: ... پاسخنانه تشریحی تکلیف شماره ... کلاس: ...

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

$$\Delta(x) \rightarrow x-1-x+1 = x-x \geq 0 \rightarrow [2, \infty)$$

$$x < 2 \rightarrow x+3-x+1 = 3 \geq 0 \rightarrow x < 2$$

$$[-\frac{2}{3}, 2)$$

$$D_f = [-\frac{2}{3}, 2)$$

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

$$\Delta = 0 \rightarrow ((x + \frac{1}{2})(x + \frac{1}{2}))^2 \rightarrow (x + \frac{1}{2})^2$$

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

$$f(x) = \begin{cases} \frac{(x-1)(x+1)(x+5)}{(x+1)(x-1)} & x \neq \pm 1 \\ \frac{ax+5}{x+b} & x = \pm 1 \end{cases}$$

$$g(x) = x + c$$

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

$$f(1) = \frac{a+5}{1+b} = 1 \rightarrow \begin{cases} a=1 \\ b=-1 \end{cases}$$

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

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

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

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

$$b=c$$

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

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

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

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

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

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

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

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

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

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

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

$$f(4) = 9$$

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

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

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

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

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

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

$$g(x) = \sqrt{b - 2x} + 3k \rightarrow k = \frac{1}{3}$$

$$2f - g = 1 \rightarrow 2\sqrt{2x - 3a} + 2k - 2 - \sqrt{b - 2x} - 3k = 1$$

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

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

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

$$m + n = 5$$

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

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

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

$$f - 5\sqrt{c} = 4\sqrt{c} \rightarrow f(4) = 9\sqrt{c}$$

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

$$f(4) = \sqrt{m - 4} + n = 9\sqrt{c}$$

$$m + n = 5 + 9\sqrt{c} - 4 = 1 + 9\sqrt{c}$$