

نام و نام خانوادگی پایه شماره کلاس پاسخنامه تشریحی تکلیف شماره ۳۰

۲۰ افزاینه عاقل نوشته

$$f(x) = \begin{cases} 2x-1 & x \geq \omega \rightarrow 2x-1 - x+1 \geq 0 \rightarrow x \geq 0 \\ 2x+3 & x < \omega \rightarrow 2x - x+1 \geq 0 \rightarrow x \geq -\frac{1}{2} \rightarrow -\frac{1}{2} \leq x < \omega \end{cases}$$

$$f(x) \geq x-1$$

$$\rightarrow \left[-\frac{1}{2}, \omega\right) \cup [\omega, +\infty) \rightarrow \boxed{\left[-\frac{1}{2}, +\infty\right)}$$

$$y = \frac{3(2x+1)^3}{((2x+1)^2)^2} = \frac{3}{2x+1} \rightarrow 2x \neq -1 \rightarrow x \neq -\frac{1}{2}$$

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

$$x \neq \pm 1 \rightarrow f(x) = g(x) \rightarrow \frac{(x-1)(x+1)(x+2)}{(x-1)(x+1)} = x+C \rightarrow x+2 = x+C \rightarrow \boxed{C=2}$$

$$x \begin{cases} \xrightarrow{+1} \frac{a+2}{1+b} = 1+2 \rightarrow 2b-a = -1 \\ \xrightarrow{-1} \frac{-a+2}{-1+b} = 1 \rightarrow a+b = 2 \end{cases} \rightarrow \begin{cases} 2b-a = -1 \\ a+b = 2 \end{cases} \rightarrow \begin{cases} b = \frac{1}{3} \\ a = \frac{5}{3} \end{cases}$$

$$f(x) = g(x) \rightarrow \frac{x+1}{x-C} = \frac{(x+1)(x-1)}{(x-1)(x-1)} \rightarrow \begin{cases} C=1 \\ b=1 \\ a=-2 \end{cases} \rightarrow (x-1)^2 = x^2 - 2x + 1$$

$$a+b+C = \boxed{0}$$

$$g(x) = (x-2)^2(x) - (x)(-x-2)^2 = x(x^2 - 4x + 4 - x^2 - 4 - 4x)$$

$$= x(-1x) = -1x^2 \Rightarrow \boxed{g(x) = -1x^2}$$

$$f(-1) \Rightarrow 1 - \sqrt{x} = -1 \rightarrow x = 1 \xrightarrow{x=1} \sqrt{1} = 1 \quad \left. \begin{array}{l} f(-1) \Rightarrow 1 - \sqrt{x} = -1 \rightarrow x = 1 \xrightarrow{x=1} \sqrt{1} = 1 \\ f(1) \Rightarrow 1 - \sqrt{x} = 1 \rightarrow x = -1 \xrightarrow{x=-1} \sqrt{-1} + 1 = 1 \end{array} \right\} \rightarrow \sqrt{x+1} = 1 \quad \checkmark$$

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6

$$x + \sqrt{x} = 4 \rightarrow t^2 + t - 4 = 0 \rightarrow (t-2)(t+3) = 0 \quad t = \sqrt{x} \begin{array}{l} \rightarrow -3 \rightarrow x = 9 \\ \rightarrow 2 \rightarrow x = 4 \end{array}$$

$$f(4) = \sqrt{4} + 3(\sqrt{4}) = 2 + 6 = 8 \quad \checkmark$$

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

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

$$(x-1)(x^2 - 2x + 1 + 1 - x^2 + 2x - 1) = 0 \quad \checkmark$$

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8

$$D_f \rightarrow \sqrt{x - \sqrt{x}} > 0 \rightarrow x > \frac{\sqrt{x}}{\sqrt{x}} \quad \left. \begin{array}{l} D_f \rightarrow \sqrt{x - \sqrt{x}} > 0 \rightarrow x > \frac{\sqrt{x}}{\sqrt{x}} \\ D_g \rightarrow \sqrt{b - \sqrt{x}} > 0 \rightarrow x < \frac{b}{\sqrt{x}} \end{array} \right\} \xrightarrow{x=1} \boxed{a = \frac{1}{\sqrt{1}}} \text{ و } \boxed{b = 1}$$

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9

$$\sqrt{x - \sqrt{x}} = \sqrt{1 - \sqrt{1}} \rightarrow \sqrt{1 - 1} + \sqrt{1 - 1} - \sqrt{1 - 1} = 0 \rightarrow \boxed{K = -1}$$

$$\sqrt{\frac{1}{x}} - \frac{1}{x} - (-1) = 1 \quad \checkmark$$

$$D_g = [-1, +\infty) \xrightarrow{m=V} D_f = (-\infty, V] \xrightarrow{m=V} m - V = 0 \rightarrow \boxed{m = V}$$

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$$\sqrt{V - \sqrt{V}} + n - \sqrt{V} = 4\sqrt{V} \rightarrow \boxed{n = 3\sqrt{V} + \sqrt{V}}$$

$$\boxed{m + n = 4\sqrt{V} + \sqrt{V}} \quad \checkmark$$