

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره کلاس $\frac{1}{2}$

$$f(x) = \begin{cases} (x+1)(x+2) & ; x > 1 \\ 2x + 2x & ; x \leq 1 \end{cases}$$

$$a=x \rightarrow (2a+2) = 2a - 2 + a$$

$$x=-2 \rightarrow 2a - 2$$

$$f(a) = f(-2) + a$$

$$12a + 12 = 2a - 2$$

$$10a = -14$$

$$a = -1,4$$

1

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2$$

$$f(\sqrt{x}) \rightarrow \sqrt{\sqrt{x}} + \frac{1}{\sqrt{\sqrt{x}}} + 2$$

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

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3

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

$$f(0) = ?$$

$$x+1=0$$

$$x=-1$$

$$f(0) = \frac{\frac{2 \cdot 0^2 - m \cdot 0 + m - 1}{0}}{1} = \frac{m-1}{1} = m-1$$

4

$$f(x) + f(\frac{1}{x}) = \frac{2x^2 - 12x + 10}{x}$$

$$f(-1) = ?$$

$$f(x) = ax + b \rightarrow f(\frac{1}{x}) = \frac{a}{x} + b$$

$$(ax + b + \frac{a}{x} + b) = \frac{2x^2 - 12x + 10}{x}$$

$$ax^2 + bx + a + \frac{a}{x} + b = \frac{2x^2 - 12x + 10}{x}$$

$$ax^2 + bx + a + \frac{a}{x} + b = \frac{2x^2 - 12x + 10}{x}$$

$$a = 2 \quad b = -12 \rightarrow b = -12$$

$$f(x) = 2x - 12$$

$$f(-1) = 2(-1) - 12 = -14$$

5

$\begin{cases} f(x) = (x-1)\sqrt{1-x} \geq 0 & D_f = x \leq 1 \\ g(x) = -\sqrt{(1-x)^3} \geq 0 & D_g = x \leq 1 \end{cases} \quad D_f = D_g$ سویلا تابع یاریند $g(x) = -\sqrt{(1-x)^3} \rightarrow -\sqrt{(1-x)^2(1-x)} \rightarrow \frac{(x-1)}{(1-x)}\sqrt{1-x} = f(x)$ $\Rightarrow R_f = R_g$	۶
$\begin{cases} f(x) = x\sqrt{x} \geq 0 & x \geq 0 \\ g(x) = \sqrt{x^3} \geq 0 \rightarrow x \geq 0 \end{cases} \quad D_f = D_g$ سویلا تابع یاریند $f(x) = x\sqrt{x} \rightarrow \sqrt{x \cdot x^2} = \sqrt{x^3} \Rightarrow R_f = R_g$	۷
$\begin{cases} f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] \rightarrow x \geq 0 \\ g(x) = \sqrt{x - \lfloor x \rfloor} \quad x \geq 0 \end{cases} \quad D_f = D_g$ سویلا تابع یاریند $\forall x \in \mathbb{R}^+ \quad R_f = R_g$	۸
$g = \{(-1, 1), (1, 1), (2, 3), (3, 2), (0, 2), (\sqrt{2}, 1)\} \quad f = \{(1, 2), (2, 3), (3, 1), (0, 0)\}$ ۱) $\left(\frac{f+g}{f-g}\right)(1) = \frac{f(1)+g(1)}{f(1)-g(1)} = \frac{1+1}{1-1} = 2$ ۲) $\left(\frac{f+g}{f-g}\right)(2) = \frac{f(2)+g(2)}{f(2)-g(2)} = \frac{3+3}{3-3} = \text{تعریف نشده}$ ۳) $f(0)g(-1) = 0$	۹
$f(x) = \{(2, 1), (-1, 4), (0, 2), (-2, 2), (3, -1)\}$ ۱) $g(x) = f(2x-1)$ $2x-1=2 \Rightarrow x=1.5$ $g(1.5) = f(2) = 1$ $2x-1=0 \Rightarrow x=0.5$ $g(0.5) = f(0) = 2$ $2x-1=-1 \Rightarrow x=0$ $g(0) = f(-1) = 4$ $2x-1=-2 \Rightarrow x=-0.5$ $g(-0.5) = f(-2) = 2$ $2x-1=3 \Rightarrow x=2$ $g(2) = f(3) = -1$ ۲) $h(x) = f(x)$ $x =0 \Rightarrow x=0$ $h(0) = f(0) = 2$ $x =2 \Rightarrow x=\pm 2$ $h(2) = f(2) = 1$ $h(-2) = f(2) = 1$ $x =3 \Rightarrow x=\pm 3$ $h(3) = f(3) = -1$ $h(-3) = f(3) = -1$ ۳) $h(x) = \{(-3, -1), (-2, 1), (0, 2), (2, 1), (3, -1)\}$	