

نام و نام خانوادگی: محمد بنیادی
پاسخنامه تشریحی تکلیف شماره ۶ کلاس الیبر A

$$2f(a) = f(-1) + a \Rightarrow 2(a+1)(a+2) = 3a - 4 + a$$

$$\Rightarrow 14a + 14 = 4a - 4 \Rightarrow 10a = -18 \Rightarrow \boxed{a = -1, 1}$$

۱

$$\sqrt{2-\sqrt{3}} + \frac{1}{2-\sqrt{3}} + 2 + \sqrt{2+\sqrt{3}} + \frac{1}{2+\sqrt{3}} + 2$$

$$\frac{(2+\sqrt{3}) + (2-\sqrt{3})}{(2-\sqrt{3})(2+\sqrt{3})} + 4 + \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} = 2\sqrt{2+\sqrt{3}} + 2\sqrt{2-\sqrt{3}} + 4$$

$$\sqrt{2(\sqrt{3}-1)^2} + \sqrt{2(\sqrt{3}+1)^2} + 4 = \sqrt{2}(\sqrt{3}-1) + \sqrt{2}(\sqrt{3}+1) + 4$$

$$\sqrt{4-2\sqrt{3}} + \sqrt{4+2\sqrt{3}} + 4 = \boxed{4 + 2\sqrt{4}}$$

۲

$$\begin{cases} 2f(x) - 4f(-x) = 5x^5 - x \xrightarrow{\times 2} 4f(x) - 8f(-x) = 10x^5 - 2x \\ 2f(x) - 4f(x) = 4x^5 + x \xrightarrow{\times 2} 4f(-x) - 8f(x) = 10x^5 + 2x \\ -4f(x) = 2x^5 + x \\ f(x) = \frac{5}{-4}x^5 + \frac{x}{-4} \Rightarrow f(x) = -\frac{5}{4}x^5 - \frac{x}{4} \end{cases}$$

۳

$$\begin{aligned} x=0 &\Rightarrow 2f(0) - 0(f(x)) = 0 - 0 + 5m - 1 \Rightarrow 2f(0) = 5m - 1 \\ x=-5 &\Rightarrow 0(f(5)) + 4f(0) = 14 + 5m + 5m - 1 \Rightarrow 4f(0) = 10 + 10m \\ 4m - 5 &= 10 + 10m = 4m = 15 \Rightarrow m = \frac{15}{4} \\ \frac{3(\frac{15}{4}) - 1}{5} &= f(0) = \frac{\frac{45}{4} - 1}{5} = \frac{\frac{41}{4}}{5} = \boxed{\frac{41}{20}} \end{aligned}$$

۴

$$\begin{aligned} x=-1 &\Rightarrow f(-1) + f(\frac{1}{-1}) = \frac{5(-1)^5 - 12(-1) + 4}{-1} \Rightarrow 2f(-1) = \frac{4 + 12 + 5}{-1} \\ 2f(-1) &= -19 \Rightarrow \boxed{f(-1) = -9.5} \end{aligned}$$

۵

$$\begin{cases} f(x) = (x-1)\sqrt{1-x} \Rightarrow 1-x \geq 0 \Rightarrow x \leq 1 = D_f \\ g(x) = -\sqrt{(1-x)^3} \Rightarrow 1-x \geq 0 \Rightarrow x \leq 1 = D_g \end{cases}$$

$$g(x) = -\sqrt{(1-x)^3} = -\sqrt{(1-x)^2(1-x)} = -(1-x)\sqrt{1-x} = (x-1)\sqrt{1-x} = f(x)$$

$\boxed{g(x) = f(x)}$ ← ضابطه های آن ها برابر است

$$\begin{cases} f(x) = x\sqrt{x} \Rightarrow x \geq 0 \Rightarrow D_f = [0, +\infty) \\ g(x) = \sqrt{x^3} \Rightarrow x^3 \geq 0 \Rightarrow x \geq 0 \Rightarrow D_g = [0, +\infty) \end{cases}$$

$$g(x) = \sqrt{x^3} \Rightarrow g(x) = \sqrt{x^2 \cdot x} \Rightarrow g(x) = |x|\sqrt{x} = x\sqrt{x} = f(x)$$

$\boxed{f(x) = g(x)}$ ← ضابطه های برابر دارند

$$\begin{cases} f(x) = [\sqrt{x} - \sqrt{x}] \Rightarrow x \geq 0 \Rightarrow D_f = [0, +\infty) \\ g(x) = \sqrt{x-|x|} \Rightarrow x-|x| \geq 0 \Rightarrow x+x = 2x \Rightarrow x \geq 0 \Rightarrow D_g = [0, +\infty) \end{cases}$$

$$g(x) = \sqrt{x-|x|} = 0 \text{ است}$$

$\boxed{f(x) = g(x)}$

$$f(x) = [\sqrt{x} - \sqrt{x}] = [1.4 - 1.4] = [0] = 0$$

جواب آن همیشه 0 است

$$f = \{(0,0), (1,2), (2,3), (3,4)\} \text{ و } g = \{(0,3), (1,0), (2,1), (3,2)\}$$

$$a) \left(\frac{f+g}{f-g} \right) = \left\{ (0,-1), (1,2), (2,2), (3,-1) \right\} = \left\{ (0,-1), (1,3), (2,3), (3,-1) \right\}$$

$$b) \left(\frac{f+g}{f-g} \right) = \left\{ (0,-2), (1,4), (2,-3), (3,3) \right\}$$

$$c) = f(0) \cdot g(-1) = 0 \times 1 = 0$$

$$a) g(x) = f(xn-1)$$

$$xn-1 = 2 \Rightarrow x = 1$$

$$xn-1 = -1 \Rightarrow x = 0$$

$$xn-1 = 0 \Rightarrow x = \frac{1}{n}$$

$$xn-1 = -2 \Rightarrow x = -\frac{1}{n}$$

$$xn-1 = 3 \Rightarrow x = \frac{4}{n}$$

$$g = \left\{ \left(\frac{1}{n}, 2 \right), (0, 3), (1, 2), \left(\frac{1}{n}, \frac{1}{n} \right), \left(\frac{4}{n}, -1 \right) \right\}$$

$$h = \left\{ (0, 0), (2, 1), (-2, 1), (-3, -1), (3, -1) \right\}$$

$$f(|x|) \rightarrow |x| \rightarrow 0 \quad |x| = 0 \Rightarrow x = 0$$

$$\rightarrow 2 \quad |x| = 2 \Rightarrow x = \pm 2$$

$$\rightarrow 3 \quad |x| = 3 \Rightarrow x = \pm 3$$