

آزمون کتبی
دوره اول
وقت ۳۰ دقیقه

$$2f(a) = 2 \times V(a+1) \quad f(-2) = -9 + 3a$$

①

$$\rightarrow 12a + 12 = -9 + 3a + a \rightarrow 10a = -21 \rightarrow a = \frac{-21}{10} = -2.1$$

$$f(2-\sqrt{3}) = \sqrt{2-\sqrt{3}} + \frac{1}{\sqrt{2-\sqrt{3}}} + 2 = \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2$$

②

$$f(2+\sqrt{3}) = \sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} + 2 = \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 2$$

$$f(2+\sqrt{3}) + f(2-\sqrt{3}) = \underbrace{\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 4}_A$$

$$A = (2-\sqrt{3}) \times 4 + (2+\sqrt{3}) \times 4 + 4 = 24 \rightarrow A = 24$$

$$f(2+\sqrt{3}) + f(2-\sqrt{3}) = \boxed{24}$$

$$2f(x) - 2f(-x) = 5x^2 - x \xrightarrow{\times 2} 4f(x) - 4f(-x) = 10x^2 - 2x$$

③

$$2f(-x) - 2f(x) = 5x^2 + x \xrightarrow{\times 2} 4f(-x) - 4f(x) = 10x^2 + 2x$$

$$-8f(x) = 10x^2 + 2x$$

$$\rightarrow \boxed{f(x) = -\frac{5}{4}x^2 - \frac{1}{2}x}$$

$$x=0 \rightarrow 2f(0) = 9m-1 \rightarrow 4f(0) = 9m-3$$

④

$$x=-2 \rightarrow 4f(-2) = 18+5m$$

$$\rightarrow 9m-3 = 18+5m \rightarrow m = \frac{9}{2}$$

$$2f(0) = \frac{9}{2} - 1 = \frac{7}{2} \rightarrow \boxed{f(0) = \frac{7}{4}}$$

$$f(u) + f\left(\frac{1}{u}\right) = au + b + \frac{a}{u} + b = \frac{au^2 + 2bu + a}{u} = \frac{4u^2 - 12u + 4}{u} \quad (3)$$

$$\rightarrow a=4, b=-4 \quad f(u) = 4u - 4 \rightarrow \boxed{f(-1) = -4 - 4 = -8}$$

$$Df \rightarrow 1 - u > 0 \rightarrow u < 1$$

$$Dg \rightarrow (1-u)^3 > 0 \rightarrow 1-u > 0 \rightarrow u < 1$$

$$\rightarrow Df = Dg$$

با همگونی متوجهی توهم نتایج برابرند

$$Df \rightarrow u > 0$$

$$Dg \rightarrow u^2 > 0 \rightarrow u > 0 \rightarrow Df = Dg$$

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$$Df \rightarrow u > 0$$

$$Dg \rightarrow u - |u| > 0 \rightarrow u > 0$$

با همگونی متوجهی توهم نتایج برابرند

$$\text{الف) } \frac{f(1)+g(1)}{f-g} = \frac{2+1}{2-1} = 3$$

$$\text{ب) } \frac{f(2)+g(2)}{f-g} = \frac{4}{0} \rightarrow \boxed{\text{تعریف نشده}}$$

$$\text{ج) } \frac{f(0)+g(-1)}{f-g} = \frac{0+1}{0-1} = -1$$

$$\text{د) } g(u) = \left\{ (1,1), (0,4), \left(\frac{1}{3}, 5\right), \left(-\frac{1}{3}, 2\right), \left(\frac{4}{3}, -1\right) \right\}$$

$$\text{ه) } h(u) = \left\{ (2,1), (-2,1), (0,5), (3,-1), (-3,-1) \right\} \rightarrow |u|=2 \rightarrow u=\pm 2$$

$$|u|=1 \times 6 \rightarrow |u|=0 \rightarrow u=0$$

$$|u|=3 \rightarrow u=\pm 3$$

$$|u|=2 \times$$