

عین شادری - یاد هم سر - کتب 40

$$(f(a) + f(a - f(a))) \Rightarrow 10a - 11 \Rightarrow \boxed{a = 11}$$

1

$$\rightarrow (1 - \sqrt{e})(1 + \sqrt{e}) \leq 1 \rightarrow 1 - \sqrt{e} \leq \frac{1}{1 + \sqrt{e}}$$

2

$$\rightarrow f(1 - \sqrt{e}) + f(1 + \sqrt{e}) \leq 2 f(1 + \sqrt{e}) \leq 2\sqrt{e} + 2\left(\frac{1}{\sqrt{e}}\right) \leq 4$$

$$\frac{x + 1 - \sqrt{e}}{1 - \sqrt{e}} \leq 1 + \sqrt{e} \leq \frac{x + 1 + \sqrt{e}}{1 + \sqrt{e}} \leq \frac{(\sqrt{e} + 1)^2}{2}, \quad 1 - \sqrt{e} \leq \frac{(\sqrt{e} - 1)^2}{2}$$

$$\rightarrow \frac{1(\sqrt{e} + 1)}{\sqrt{e}} + \frac{1(\sqrt{e} - 1)}{\sqrt{e}} + 4 \leq \frac{4\sqrt{e}}{\sqrt{e}} + 4 \leq \boxed{4 + 2\sqrt{e}}$$

$$\xrightarrow{n=2} (1 f(n) - 2 f(-n)) \leq (2^n - 2) \times 2 \quad \left\{ \begin{array}{l} 1 f(n) - 4 f(-n) \leq 1 \times 2^n - 4 \\ 4 f(-n) - 9 f(n) \leq (1 \times 2^n + 4) \end{array} \right.$$

3

$$\xrightarrow{n=2} (1 f(-n) - 2 f(n)) \leq (2^n + 2) \times 2 \quad \left\{ \begin{array}{l} 4 f(-n) - 9 f(n) \leq (1 \times 2^n + 4) \end{array} \right.$$

$$\Rightarrow -2 f(n) \leq 2 \times 2^n + 2$$

$$\Rightarrow \boxed{f(n) \leq -2 \times 2^n - \frac{1}{2} \times 2}$$

$$\xrightarrow{n=0} 1 f(0) \leq 0 - 1 \Rightarrow f(0) \leq \frac{0 - 1}{1}$$

4

$$\xrightarrow{n=2} 4 f(0) \leq 14 + 2m + 0 - 1 \Rightarrow 4m - 1 \leq 4m + 14 \Rightarrow 1 \leq 14 \Rightarrow m \leq \frac{9}{4}$$

$$\Rightarrow f(0) \leq \frac{\frac{9}{4} - 1}{1} \leq \boxed{\frac{5}{4}}$$

$$a n^2 + b n + a(1/n) + b \leq \frac{c n^2 - 11 n + c}{n} \Rightarrow a n + 1/b + a/n \leq \frac{c n^2 - 11 n + c}{n}$$

5

$$\rightarrow a n^2 + 1/b n + a \leq c n^2 - 11 n + c \Rightarrow a = c, b = -4 \Rightarrow f(n) \leq c n - 4$$

$$\Rightarrow \boxed{f(1) \leq -4}$$

$$\left\{ \begin{array}{l} f(x) = (x-1)\sqrt{1-x} \rightarrow 1-x \geq 0 \Rightarrow x \leq 1 \\ g(x) = -\sqrt{(1-x)^3} \rightarrow (1-x)^3 \geq 0 \Rightarrow 1-x \geq 0 \Rightarrow x \leq 1 \end{array} \right\} \rightarrow f(x) = g(x) \quad -4$$

$$\left\{ \begin{array}{l} f(x) = x\sqrt{x} \rightarrow x \geq 0 \\ g(x) = \sqrt{x^3} \rightarrow x \geq 0 \end{array} \right\} \cdot D_{f(x)} = D_{g(x)} \Rightarrow f(x) = g(x) \quad -5$$

$$\left\{ \begin{array}{l} f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] \rightarrow x \geq 0 \\ f(x) = \sqrt{x - |x|} \rightarrow D_f \subset \mathbb{R} \end{array} \right\} \text{نمیباشند} \rightarrow f(x) \neq g(x) \quad -1$$

$$a) \left(\frac{f+g}{f-g} \right)(1) = \frac{2+1}{2-1} = 3 \quad -9$$

$$b) \left(\frac{f+g}{f-g} \right)(2) = \frac{2+2}{2-2} \cdot \text{X} \rightarrow \text{تعریف نشده}$$

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

$$d) g(x) = f(x-1) \quad -1$$

$$\rightarrow x = \frac{\text{دولت} + 1}{2} \rightarrow g(x) = \left\{ (1,1), (0,1), \left(\frac{1}{2}, 1\right), \left(-\frac{1}{2}, 1\right), \left(\frac{3}{2}, 1\right) \right\}$$

$$e) h(x) = f(|x|)$$

$$\rightarrow h(x) = \left\{ (-1,1), (0,1), (1,1) \right\}$$