

①

$$\sqrt{(a+1)\sqrt{a}} = \sqrt{a} - \sqrt{a+1} \rightarrow 1\sqrt{a} + 1\sqrt{a} = \sqrt{a} - \sqrt{a}$$

$$1 \cdot a = -1$$

$$\boxed{a = -1}$$

②

$$\frac{1}{\sqrt{x}} \xrightarrow{x=2-\sqrt{3}} \frac{1}{\sqrt{2-\sqrt{3}}} \times \frac{\sqrt{2+\sqrt{3}}}{\sqrt{2+\sqrt{3}}} = \sqrt{2+\sqrt{3}} \rightarrow \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 2 + \sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} + 2 =$$

$$\frac{1}{\sqrt{x}} \xrightarrow{x=2+\sqrt{3}} = \sqrt{2-\sqrt{3}}$$

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

↓ به توان ۲ می رسانیم

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

③

$$\begin{aligned} \xrightarrow{x} \sqrt{f(x)} - \sqrt{f(-x)} &= \sqrt{x^2 - x} \rightarrow (f(x) - 4f(-x)) = 1x^2 - 2x \\ \xrightarrow{-x} \sqrt{f(-x)} - \sqrt{f(x)} &= \sqrt{x^2 + x} \rightarrow 4f(-x) - 9f(x) = 12x^2 + 12x \end{aligned}$$

$$\left\{ \begin{aligned} -\omega f(x) &= 2 \cdot x^2 + x \\ f(x) &= -\frac{1}{\omega} x^2 - \frac{x}{\omega} \end{aligned} \right.$$

④

$$\begin{aligned} x=0 \rightarrow \sqrt{f(0)} &= \sqrt{m-1} \\ f(0) &= \frac{9}{r} m - \frac{1}{r} \times 9 \rightarrow 9f(0) = 9m - 2 \\ x=-2 \rightarrow 9f(0) &= 14 + \underbrace{2m + 3m-1}_{\omega m} \end{aligned}$$

$$\left\{ \begin{aligned} 14 + \omega m - 1 &= 9m - 2 \\ \omega &= 8m \\ m &= \frac{9}{r} \end{aligned} \right.$$

$$f(0) = \frac{9}{r} \times \frac{9}{r} - \frac{1}{r} = \frac{81}{r^2} - \frac{1}{r} = \frac{81 - r}{r^2}$$

⑤

$$\frac{3x^2 - 12x + 3}{3x^2} \rightarrow f(x) + f\left(\frac{1}{x}\right) = 3x - 12 + \frac{3}{x}$$

$$\begin{array}{r} 3x^2 - 12x + 3 \\ 3x^2 \\ \hline -12x + 3 \\ -12x \\ \hline 3 \end{array}$$

$$\xrightarrow{x=-1} \sqrt{f(-1)} = -3 - 12 - 3$$

$$\sqrt{f(-1)} = -18$$

$$\boxed{f(-1) = -9}$$

⑥

$$\left. \begin{aligned} f(x) &= (x-1)\sqrt{1-x} \\ g(x) &= (x-1)\sqrt{1-x} \end{aligned} \right\} \begin{aligned} 1-x &\geq 0 \\ x &\leq 1 \end{aligned}$$

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

$$\boxed{\text{برابرند}}$$

$$D_{g,f} = x \geq 0$$

برابرند

$$D_f = x \geq 0$$

$$D_g = x \geq 0$$

$$x \geq |x|$$

$$x \geq 0$$

برابر هستند

$$\text{الف) } \frac{\cancel{3+3}}{\cancel{2+2}} = 3$$

$$\text{ب) } \frac{3+3}{\cancel{3}-3} \rightarrow \text{تعریف نشده}$$

$$\text{ج) } 0 \times 1 = 0$$

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

$$\text{ب) } = \left\{ (2, 1) (-2, 1) (0, 5) (3, -1) (-3, -1) \right\}$$

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