

(1)

(2)

$$\sqrt[4]{(4+\sqrt{5})^{-1}} \times \sqrt{1+\sqrt{5}} = \sqrt[4]{4\sqrt{5}}$$

$$\sqrt[4]{\frac{1}{4+\sqrt{5}}} \times \sqrt{(1+\sqrt{5})^2} \rightarrow \sqrt[4]{\frac{(1+\sqrt{5})^2}{4+\sqrt{5}}} \rightarrow \frac{1+\sqrt{5}}{4\sqrt{5}} \rightarrow \sqrt[4]{\frac{1}{5}}$$

$$\therefore \frac{\sqrt{2} \times \sqrt{5}}{\sqrt{10} + 2} \xrightarrow{\text{توابع}} \frac{(\sqrt{2} \times \sqrt{5})(\sqrt{10} - 2)}{10 - 4} = \frac{2\sqrt{2}}{6} = \frac{\sqrt{2}}{3}$$

$$\frac{\sqrt{2}}{3} \times (\sqrt{3} - \sqrt{5} - \sqrt{2} \times \sqrt{5}) \rightarrow \frac{\sqrt{2}(\sqrt{3} - \sqrt{5} - \sqrt{2} \times \sqrt{5})}{3} = \frac{\sqrt{6} - \sqrt{10} - 2}{3}$$

$$= \frac{\sqrt{6} - 1 - \sqrt{5} - 1}{3} = -\frac{2}{3} = \boxed{-\frac{2}{3}}$$

(3)

$$\frac{\sqrt{8} \times \sqrt{2}}{\omega - \sqrt{6}} - \frac{2(\sqrt{9} - 1)^{-1}}{\omega} =$$

$$\frac{2\sqrt{2} \times \sqrt{2}}{\omega \sqrt{6}} \xrightarrow{\text{توابع}} \frac{(2\sqrt{2} \times \sqrt{2})(\omega \sqrt{6})}{2\omega - 4} = \frac{19\sqrt{2} \times 19\sqrt{2}}{19} = \frac{19 \times 2}{1} = 38$$

$$\rightarrow -2(\sqrt{9} - 1)^{-1} = -\frac{2}{\sqrt{9} - 1} \rightarrow \frac{-2(\sqrt{9} + 1)}{9 - 1} = \frac{-2(\sqrt{9} + 1)}{8} = \frac{-\sqrt{9} - 1}{4} = \frac{-3 - 1}{4} = -1$$

$$\therefore \frac{\sqrt{2} \times \sqrt{2}}{4\sqrt{2}} + \frac{2(\sqrt{9} - 1)^{-1}}{4\sqrt{2}} \rightarrow \frac{2\sqrt{2} \times \sqrt{2}}{4\sqrt{2}} + \frac{2(\sqrt{9} - 1)^{-1}}{4\sqrt{2}} = \frac{2\sqrt{2}}{4\sqrt{2}} + \frac{2(\sqrt{9} - 1)^{-1}}{4\sqrt{2}} = \frac{1}{2} + \frac{2(\sqrt{9} - 1)^{-1}}{4\sqrt{2}}$$

$$\sqrt{2} - 1 + 2\sqrt{2} = \boxed{3\sqrt{2} - 1}$$

$$\sqrt[4]{2\sqrt{2}} \times \sqrt[4]{142} \times \sqrt[4]{4\sqrt{2}} = 2\sqrt[4]{12}$$

$$\left[\frac{1}{12} \times \frac{1}{12} \times \frac{1}{12} = \frac{1}{12} \right]$$

(4) (2)

(1)

$$\frac{x^n (1 + x + x^2 + \dots + x^{n-1})}{x^{n-1} (1 + x + x^2 + \dots + x^{n-1})} = \frac{x^n}{x^{n-1}} \times \frac{x}{x} = x \quad (5)$$

$$\begin{matrix} x^n = x^2 & n=2 \\ x^{n-1} = 1 & n=2 \end{matrix}$$

پس x^n با x^{n-1} مساوی است و
سود و x^{n-1} با 1 مساوی است

$$(a-b)^2 (a+b)^2 \rightarrow (a^2-b^2)^2 = t(2-\sqrt{2})$$

$$\hookrightarrow ((a-b)(a+b))^2 \rightarrow (\sqrt{4-x} - \sqrt{4+x})^2 = t(2-\sqrt{2}) = 14(2-\sqrt{2})$$

$$(\sqrt{4-x} + \sqrt{4+x} - 2\sqrt{(\sqrt{4-x})(\sqrt{4+x})})^2 = \dots$$

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$$(2\sqrt{4-x} - 2\sqrt{4+x})^2 = \dots$$

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

$$(a + \frac{1}{a} + \sqrt{2})^2 (a + \frac{1}{a} - \sqrt{2})^2 = x^4$$

$$\hookrightarrow [(a + \frac{1}{a} + \sqrt{2})(a + \frac{1}{a} - \sqrt{2})]^2 \rightarrow (a + \frac{1}{a})^2 - 2 = a^2 + \frac{1}{a^2} + 2 = x^4$$

$$a = \sqrt[4]{x-4} \rightarrow a^4 = x-4 \rightarrow x-4 = \sqrt[4]{x-4} \rightarrow \sqrt[4]{x-4} = x-4 \rightarrow x-4 = 14 = x^4 \rightarrow \boxed{x=4}$$

$$A = \sqrt[4]{16\sqrt{14}} \left(\frac{1}{x}\right)^{\frac{1}{4}} \rightarrow \sqrt[4]{16} \times \frac{1}{x^{\frac{1}{4}}} \rightarrow \frac{2}{x^{\frac{1}{4}}} = \frac{1}{10} \rightarrow x^{\frac{1}{4}} = 20 \rightarrow x = 160000$$

$$(x+4)^{-\frac{1}{2}} = \frac{1}{\sqrt{x+4}} = \frac{1}{\sqrt{16}} = \frac{1}{4} \rightarrow \boxed{x=0}$$

$$\sqrt{x} = x + a \frac{10}{x} \xrightarrow{(\cdot)^2} a = (x + a \frac{10}{x})^2 \rightarrow x^2 + 20a + \frac{100a^2}{x^2} = a^2 \rightarrow x^2 + 20a = a^2 - \frac{100a^2}{x^2}$$

$$\frac{(\sqrt{2x} - 2)}{1 + \sqrt{2}} = \frac{2(\sqrt{2x} - 2)}{(1 + \sqrt{2})} = \dots \rightarrow \boxed{x=2}$$

$$\sqrt{n+a} - \sqrt{n-4} = x \rightarrow \sqrt{n+a} = \sqrt{n-4} + x \rightarrow n+a = n-4 + 2x\sqrt{n-4} + x^2 \rightarrow n+a = n-4 + 2x\sqrt{n-4} + x^2$$

$$\sqrt{\frac{a^2}{14} + 6a} + \sqrt{\frac{a^2}{14} + 4a - 4} = 25 \rightarrow \frac{|a+1| + |a-1|}{2} = 25 \rightarrow \frac{a}{2} = \sqrt{n-4} \rightarrow a^2 = 4(n-4)$$