

(1)

(2)

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

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

$$\therefore \frac{\sqrt{2} \times \sqrt{5}}{\sqrt{10+2}} \xrightarrow{\text{توابع}} \frac{(\sqrt{2} \times \sqrt{5})(\sqrt{10-2})}{10-4} \rightarrow \frac{\sqrt{20}-2\sqrt{10}+2\sqrt{10}-2\sqrt{2}}{6} = \frac{4\sqrt{2}}{6} = \frac{\sqrt{2}}{3}$$

$$\frac{\sqrt{2}}{3} \times (\sqrt{10}-\sqrt{5}-\sqrt{2+\sqrt{5}}) \rightarrow \frac{\sqrt{2}(\sqrt{10}-\sqrt{5}-\sqrt{2+\sqrt{5}})}{3} = \frac{\sqrt{20}-\sqrt{10}-\sqrt{2+\sqrt{5}}}{3} = \frac{\sqrt{20}-\sqrt{10}-1}{3} = -\frac{1}{3}$$

(3)

$$\frac{\sqrt{8} \times \sqrt{2}}{5-\sqrt{5}} - \frac{2(\sqrt{9}-1)^{-1}}{4} =$$

$$\frac{2\sqrt{2} \times \sqrt{2}}{5-\sqrt{5}} \xrightarrow{\text{توابع}} \frac{(2\sqrt{2} \times \sqrt{2})(5+\sqrt{5})}{25-5} = \frac{10\sqrt{2} \times (5+\sqrt{5})}{20} = \frac{5\sqrt{2}(5+\sqrt{5})}{10} = \frac{\sqrt{2}(5+\sqrt{5})}{2}$$

$$\rightarrow -\frac{2}{(\sqrt{2}-1)^{-1}} = \frac{-2}{\sqrt{2}-1} \rightarrow \frac{-2(\sqrt{2}+1)}{(\sqrt{2}-1)(\sqrt{2}+1)} = \frac{-2(\sqrt{2}+1)}{2-1} = -2(\sqrt{2}+1) = -2\sqrt{2}-2$$

$$\therefore \frac{\sqrt{2} \times \sqrt{2}}{4+\sqrt{2}} + \frac{2(\sqrt{2}-1)}{4-\sqrt{2}} \rightarrow \frac{2}{4+\sqrt{2}} + \frac{2(\sqrt{2}-1)(4+\sqrt{2})}{(4-\sqrt{2})(4+\sqrt{2})} = \frac{2}{4+\sqrt{2}} + \frac{2(\sqrt{2}-1)(4+\sqrt{2})}{16-2} = \frac{2}{4+\sqrt{2}} + \frac{2(\sqrt{2}-1)(4+\sqrt{2})}{14}$$

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

$$\sqrt{2} \times \sqrt{2} \times \sqrt{142} \times \sqrt{42} = 2 \times \sqrt{12}$$

$$\left[\frac{1}{12} \times \frac{1}{12} + \frac{1}{6} = \frac{2}{12} = \frac{1}{6} \right]$$

(4) (2)

(1)

۱- عامل‌های ۳ و ۲ را با هم دارد پس از ۵! به بعد کین فکتوریل‌ها صفر است پس کین است و رقم کین ۱ تا ۴ نزدیک به صفر است!

$$1! + 3! = 1 + 4 = 5$$

$$2! + 4! = 2 + 24 = 26 \rightarrow \text{کین} = 4 \times 5 = 20$$

۲- الف

$$\sqrt{1 + \sqrt{3}} + \sqrt{\sqrt{3} - 1} = A$$

$$A^2 = 1 + \sqrt{3} + \sqrt{3} - 1 + 2\sqrt{\sqrt{3} - 1} = 2\sqrt{3} + 2\sqrt{2}$$

$$A = \sqrt{2}(\sqrt{\sqrt{3} + \sqrt{2}})$$

$$\frac{\sqrt{2}(\sqrt{\sqrt{3} + \sqrt{2}})}{\sqrt{\sqrt{3} - \sqrt{2}}} = \sqrt{2} \sqrt{\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}} = \sqrt{2} \sqrt{\frac{(\sqrt{3} + \sqrt{2})^2}{3 - 2}} = \sqrt{2}(\sqrt{3} + \sqrt{2}) = \sqrt{6} + 2 \xrightarrow{-2} \text{عبایت} = \sqrt{6}$$

۳- الف

$$a^{\frac{1}{\sqrt{3}}} = \sqrt{3} \times a^{\frac{14}{\sqrt{3}}} \rightarrow a^{\frac{14}{\sqrt{3}}} \times \sqrt{3} = 1 \rightarrow a = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\frac{1}{a} = \left(\frac{4}{\sqrt{3}} - 3\right) = \frac{4 - 3\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}(4\sqrt{3} - 3)}{\sqrt{3}} \times \frac{1}{1 + \sqrt{3}} = \frac{3(\sqrt{3} - 1)}{1 + \sqrt{3}} \times \frac{1 - \sqrt{3}}{1 - \sqrt{3}} = \frac{3(4 - \sqrt{3})}{2} = 6 - \frac{3\sqrt{3}}{2}$$

۴- الف

دو عبارت داده شده در صورت نول یادآور اتحاد مزدوج است...

$$\underbrace{(\sqrt{n+a} - \sqrt{n-4})}_r \underbrace{(\sqrt{n+a} + \sqrt{n-4})}_t = n+a - n - (-4) = a+4$$

$$rt = a+4 \rightarrow t = \frac{a}{r} + 4 \rightarrow t-4 = \frac{a}{r} + 4 - 4 = \frac{a}{r}$$