

$$(1! + 3! + 5! + \dots + 25!) (2! + 4! + 6! + \dots + 24!)$$

$1! = 1$ A $2! = 2$ $3! = 6$ $4! = 24$ $5! = 120$
 $A = 1! + 3! = 7$ $B = 2! + 4! = 26$
 $AB = 7 \times 26 = 182$ $\rightarrow$ رقم یکان ۲
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$$\sqrt[4]{(4+\sqrt{5})^2} \sqrt[4]{(1+\sqrt{5})^2} = \sqrt[4]{\frac{1}{4+\sqrt{5}} \times (1+\sqrt{5})^2} = \sqrt[4]{\frac{(1+\sqrt{5})^2}{4+\sqrt{5}}}$$

$$= \sqrt[4]{\frac{1+2\sqrt{5}+5}{4+\sqrt{5}}} = \sqrt[4]{\frac{6+2\sqrt{5}}{4+\sqrt{5}}} = \sqrt[4]{2}$$

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$$\frac{\sqrt{17}-1}{4+\sqrt{4}} + (2-\sqrt{3})^{-1} - \frac{(4-\sqrt{3})(\sqrt{17}-1)}{13} \div \frac{1}{4-\sqrt{3}} = \frac{13\sqrt{3}-13}{13} \div 2+\sqrt{3} = \frac{13(\sqrt{3}-1)}{13} \div 2+\sqrt{3}$$

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

$$\frac{\sqrt{8}+\sqrt{27}}{\omega-\sqrt{4}} - 2(\sqrt{9}-1)^{-1} = \frac{2\sqrt{2}+3\sqrt{3}}{\omega-\sqrt{4}} \times \frac{\omega+\sqrt{4}}{\omega+\sqrt{4}} = \frac{10\sqrt{2}+12\sqrt{3}+15\sqrt{3}+15\sqrt{2}}{19}$$

$$= \frac{19(\sqrt{2}+\sqrt{3})}{19} = (\sqrt{2}+1) = \sqrt{2}-1$$

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

$$\Rightarrow \frac{\sqrt{17}-1}{4+\sqrt{4}} + (2-\sqrt{3})^{-1} = \frac{3\sqrt{3}-1}{4+\sqrt{4}} \times \frac{4-\sqrt{4}}{4-\sqrt{4}} = \frac{13(\sqrt{3}-1)}{13} \times \frac{1}{2-\sqrt{3}} \Rightarrow (\sqrt{3}-1)(2+\sqrt{3}) = 1+2\sqrt{3}$$

$$\frac{\sqrt{1+\sqrt{3}}}{\sqrt{3}-\sqrt{2}} + \sqrt{\sqrt{3}-1} - 2 = \frac{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}{\sqrt{3}-\sqrt{2}} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} = \frac{\sqrt{2+\sqrt{4}} + \sqrt{2-\sqrt{4}}}{1} - 2$$

$$\rightarrow (\sqrt{2+\sqrt{4}} + \sqrt{2-\sqrt{4}})^2 = 4 \rightarrow 2-2=0$$

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$$\sqrt[4]{\sqrt{28}} \times \sqrt[4]{122} \times \sqrt[4]{502} = 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 3^{\frac{1}{4}} \times 2^{\frac{1}{4}} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4} = \frac{12}{16} = \frac{3}{4}$$

$$2\sqrt{2} \times 3 \times \sqrt[4]{2} = 6\sqrt{2}\sqrt[4]{2}$$

$$\frac{3^x}{2^{x-2}} + \frac{3^{x+1}}{2^{x-1}} + \frac{3^{x+2}}{2^x} + \frac{3^{x+3}}{2^{x+1}} + \frac{3^{x+4}}{2^{x+2}} = \frac{3^x(1+3+3^2+3^3+3^4)}{2^{x-2}(1+2+2^2+2^3+2^4)} = \frac{3^x(\frac{3^5-1}{2})}{2^{x-2}(2^5-1)} = \omega^2$$

$$\frac{3^x}{2^{x-2}} \times \frac{3^4-1}{2(2^4-1)} = \omega^2 \Rightarrow \frac{(3^4-1)(3^x+1)}{2(2^4-1)(2^x+1)} = \frac{24 \times 3^x}{2 \times 15 \times 9} = \frac{24 \times 3^x}{9 \times 15} \Rightarrow \omega^2 \times 3^x \left(\frac{3}{2}\right)^x$$

$$\rightarrow \left(\frac{3}{2}\right)^x = \frac{9}{4} \rightarrow x=2$$

$$a = \sqrt[4]{\sqrt{4}-2}$$

$$b = \sqrt[4]{\sqrt{4}+2}$$

$$(a^4 + b^4 - 2ab)^2 (a^4 + b^4 + 2ab)^2 = t^2 (2 - \sqrt{4}) = ((a-b)^2 (a+b)^2)^2 = (a^2 - b^2)^4$$

$$((\sqrt[4]{4}-2)^2 - (\sqrt[4]{4}+2)^2)^2 = t^2 (2 - \sqrt{4}) \Rightarrow ((2(\sqrt{4}-\sqrt{4}))^2)^2 = 16(2-14\sqrt{4})$$

$$16(2 - \sqrt{4}) = t^2 (2 - \sqrt{4}) \Rightarrow \underline{t = 14} \quad \text{2}$$

$$a = \sqrt[4]{\frac{2 - \sqrt{4}}{(2 - \sqrt{4})^2}} \xrightarrow{\text{U.S.}} a^2 = 2 - \sqrt{4} \rightarrow \frac{1}{a^2} = 2 + \sqrt{4}$$

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

$$((a + \frac{1}{a})^2 - 2)^2$$

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

$$\rightarrow a^2 = 2 \rightarrow a = \sqrt{2} \rightarrow \underline{t = 2} \quad \text{2}$$

$$A = \sqrt[4]{\frac{2}{14}} \left(\frac{1}{2}\right)^{-\frac{2}{3}} \Rightarrow \sqrt[4]{\frac{2}{14}} \left(\frac{1}{2}\right)^{-\frac{2}{3}} = 2^{\frac{1}{4}} \times 2^{\frac{2}{3}} \Rightarrow A = 2^{\frac{11}{12}}$$

$$(2A)^{-\frac{1}{3}} = 2^{-\frac{11}{12}}$$

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$$\sqrt{a} = 2\sqrt{2} \times a^{\frac{10}{11}} \Rightarrow \sqrt{a} \cdot \frac{1}{a^{\frac{10}{11}}} = 2\sqrt{2} \Rightarrow a^{-\frac{2}{11}} = 2\sqrt{2} \Rightarrow \frac{1}{a^{\frac{2}{11}}} = 2\sqrt{2} \rightarrow a = \frac{1}{2\sqrt{2}}$$

$$\left(\frac{1}{a} - 2\right) = 2\sqrt{2} - 2 = 2(\sqrt{2} - 1)$$

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

2

$$\sqrt{\frac{x+a}{A}} - \sqrt{\frac{x-b}{B}} = 1 \rightarrow A-B = 2 \xrightarrow{\text{U.S.}} (A-B)^2 = 4 \star$$

$$\sqrt{x+a} + \sqrt{x-b} = 2 \rightarrow \underline{1-2=1}$$

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$$\frac{\sqrt{r} + \sqrt{a}}{\sqrt{r} + r} = \frac{\sqrt{r} + \sqrt{a}}{\sqrt{r}(\sqrt{a} + \sqrt{r})} = \frac{1}{\sqrt{r}}$$

ب-۲

$$(\underbrace{\sqrt{3-\sqrt{a}} - \sqrt{3+\sqrt{a}}}_b)^2 = 3-\sqrt{a} + 3+\sqrt{a} - 2\sqrt{9-a} = 4-4 = 0$$

$$\rightarrow b^2 = 0 \xrightarrow{b < 0} b = -\sqrt{r} \rightarrow \frac{1}{\sqrt{r}} \times (-\sqrt{r}) = -1$$

ع-الف

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

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

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

$$\frac{\sqrt{2}(\sqrt{\sqrt{3}+2})}{\sqrt{\sqrt{3}-2}} = \sqrt{2} \sqrt{\frac{\sqrt{3}+2}{\sqrt{3}-2}} = \sqrt{2} \sqrt{\frac{(\sqrt{3}+2)^2}{3-2}} = \sqrt{2}(\sqrt{3}+2) = \sqrt{4}+2 \xrightarrow{-2} \text{عبارت} = \sqrt{4}$$

ب-۲

$$\sqrt[4]{\sqrt[3]{r^8}} = r^{\frac{8}{12}} = r^{\frac{2}{3}}$$

$$\sqrt[4]{144} = \sqrt[4]{16 \times 9} = \sqrt[4]{16} \times \sqrt[4]{9} = 2 \times \sqrt[4]{9}$$

$$\sqrt[4]{4\sqrt{r}} = (r^{\frac{1}{2}} \times r^{\frac{1}{4}})^{\frac{1}{4}} = r^{\frac{3}{8}}$$

$$\left(r^{\frac{2}{3}} + \frac{1}{2} + \frac{13}{12} \right) \times r = \frac{1+3+13}{12} \times r = \frac{17}{12} \times r = 4 \times 3 = 12$$

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$$A = \sqrt[10]{4^3 \times 6^2} (2)^{-1(-\frac{4}{5})} = (2^2)^{\frac{1}{5}} \times 2^{\frac{4}{5}} = 2^{\frac{6}{5}} = 4$$

$$2A = 8 \rightarrow (2A)^{-\frac{1}{5}} = \sqrt[5]{\frac{1}{8}} = \frac{1}{2} = \frac{1}{2} \cdot 1$$

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دو عبارت داده شده در صورت بول یاد آور افتاد مندرج است ...!

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

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