نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ..۱.۱.. کلاس ....

$(1+(1\times2\times3)+(1\times2\times3\times4\times5)+\dots+(1\times2\times\dots\times5\times\dots\times25))(2\times1+(1\times2\times3\times4)+(1\times2\times3\times4\times5\times6)+\dots+(1\times2\times\dots\times5\times\dots\times26))=$ $\downarrow$ $1+6+ab\dots00+\dots \Rightarrow 7$ $\downarrow$ $2+24+ac\dots00+\dots00+\dots \Rightarrow 26$ $7\times26=18(2)\longrightarrow 2$	۱
الف) $\sqrt[2]{(4+\sqrt7)^{-1}}\times\sqrt{1+\sqrt7}=\sqrt{\frac{1+\sqrt7}{\sqrt{\frac72}+\frac{1}{\sqrt2}}}=\sqrt{\frac{1}{\frac{1}{\sqrt2}}}=\sqrt{\sqrt2}=\sqrt[4]{2}$ یا $2^{\frac14}$ $\lvert(\sqrt{\frac72}+\frac{1}{\sqrt2})\rvert$ ، $\frac{1}{\sqrt2}(\sqrt7+1)$ ب) $(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5})=A\to A^2=3-\sqrt5+3+\sqrt5-2\sqrt{9-5}=6-4=2\to A=\sqrt2$ $\frac{\sqrt2+\sqrt5}{\sqrt2(\sqrt5+\sqrt2)}\times\sqrt2=1$	۲
الف) $\frac{2\sqrt2+3\sqrt3}{5-\sqrt6}\times\frac{5+\sqrt6}{5+\sqrt6}=\frac{10\sqrt2+15\sqrt3+2\sqrt{12}+3\sqrt{18}}{25-6}=\frac{19(\sqrt2+\sqrt3)}{19}\Big/\left(\sqrt{\frac94}-1\right)^{-1}(-2)=\frac{1}{\sqrt3-1}\times\frac{\sqrt3+1}{\sqrt3+1}=\frac{\sqrt3+1}{2}\times-2$ $=-\sqrt3-1\Longrightarrow\sqrt2+\sqrt3-\sqrt3-1=\boxed{\sqrt2-1}$ ب) $\frac{\sqrt3^3-1^3}{4+\sqrt3}=\frac{(\sqrt3-1)(3+1+\sqrt3)}{4+\sqrt3}\Big/(2-\sqrt3)^{-1}=\frac{1}{2-\sqrt3}\times\frac{2+\sqrt3}{2+\sqrt3}=\frac{2+\sqrt3}{4-3}\Rightarrow\sqrt3-1+2+\sqrt3$ $\Rightarrow\boxed{2\sqrt3+1}$	۳
الف) $A=\frac{\sqrt{1+\sqrt3}+\sqrt{\sqrt3-1}}{\sqrt{\sqrt3-\sqrt2}}-2\to(A+2)^2=\frac{1+\sqrt3+\sqrt3-1+2\sqrt2\times(\sqrt3+\sqrt2)}{\sqrt3-\sqrt2\times(\sqrt3+\sqrt2)}=\frac{2(\sqrt3+\sqrt2)^2}{3-2}$ $(A+2)^2=2(\sqrt3+\sqrt2)^2\to A+2=\sqrt2(\sqrt3+\sqrt2)\to A+2=\sqrt6+2\to A=\sqrt6$ ب) $\sqrt[12]{2^9}\times\sqrt[3\times4]{(3^4\times2)^{4\times4}}\times\sqrt[4]{3^3\times2}=\sqrt[12]{2^9\times3^{12}\times2^3\times2^{12}}=\sqrt[12]{3^{12}\times2^{24}}=3\times2^2=3\times4=12$	۴
$\frac{3^n(1+3+3^2+3^3+3^4+3^5)}{2^n(2^{-2}+2^{-1}+1+2^1+2^2+2^3)}\longrightarrow\frac{3^n\times364}{2^n\times\frac{63}{4}}=\frac{64}{1}\longrightarrow3^n\times1=2^n\times2^{-2}\times64$ $3^n\times2^0=2^{n-2}\times3^2$ $\nearrow 3^2=3^n\to n=2$ $\searrow 2^0=2^{n-2}\to n-2=0\to n=2$	۵

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$$\left((a-b)^{\frac{1}{4}}\right)^{4}\left((a+b)^{\frac{1}{4}}\right)^{4}=4(2-\sqrt{3})\rightarrow\left[(a-b)(a+b)\right]^{4}\rightarrow(a^{2}-b^{2})^{4}$$

$$\rightarrow\left[\left(\sqrt[4]{\sqrt{3}-2}\right)^{4}-\left(\sqrt[4]{\sqrt{3}+2}\right)^{4}\right]^{4}\rightarrow\left[\left(\sqrt{3}-2\right)-\left(\sqrt{3}+2\right)\right]^{2}\rightarrow\left(\sqrt{2}-\cancel{2}+\sqrt{2}+\cancel{2}-2\sqrt{4-3}\right)^{2}$$

$$\rightarrow(2\sqrt{3}-2\sqrt{3})^{2}\rightarrow 24+8-8\sqrt{12}=32-8\sqrt{12}\rightarrow 8(4-\sqrt{12})\rightarrow\cancel{32}16(2-\sqrt{3})$$

$$16(2-\sqrt{3})=4(2-\sqrt{3})\rightarrow\boxed{b=16}$$

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$$a=\sqrt[4]{(2-\sqrt{3})^{2}}\rightarrow a=\sqrt{2-\sqrt{3}}$$

$$\left[(a+\tfrac{1}{a})^{2}-(\sqrt{2})^{2}\right]^{2}=2^{b}\rightarrow\left[\left(\frac{a^{2}+1}{a}\right)^{2}-2\right]^{2}=2^{b}\rightarrow(\tfrac{b}{4}-2)^{2}=2^{b}\rightarrow(2^{2})^{2}=2^{b}\rightarrow 2^{4}=2^{b}\rightarrow\boxed{b=4}$$

$$\left(\frac{\frac{2}{\sqrt{3}-2}+1}{\sqrt{2-\sqrt{3}}}\right)^{2}=\frac{\frac{12}{9+3-6\sqrt{3}}}{2-\sqrt{3}}=\frac{6(2-\sqrt{3})}{(2-\sqrt{3})}=6$$

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$$A=\sqrt[3]{2^{6}\times 2^{4}}\times 2^{\frac{5}{3}}\rightarrow 2^{\frac{6}{3}}\times 2^{\frac{5}{3}}=2^{\frac{6}{3}}=2^{2}$$

$$(2A)^{-\frac{1}{3}}=(2\times 2^{2})^{-\frac{1}{3}}=(2^{3})^{-\frac{1}{3}}=2^{-\frac{3}{3}}=2^{-1}=\boxed{\frac{1}{2}}$$

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$$\sqrt[7]{a}=27\,a^{\frac{15}{7}}\rightarrow a=3^{21}\times a^{15}\rightarrow 3^{-21}=a^{15}\rightarrow 3^{-3}=a^{1}\rightarrow a=3^{-\frac{3}{2}}$$

$$\frac{1}{a}-3=a^{-1}-3=\left(3^{-\frac{3}{2}}\right)^{-1}-3=3^{\frac{3}{2}}-3=2\left(\sqrt{3}-1\right)$$

$$\frac{3(\sqrt{3}-1)}{(\sqrt{3}+1)}\times\frac{(\sqrt{3}-1)}{(\sqrt{3}-1)}=\frac{3(3+1-2\sqrt{3})}{3-1}=\frac{3(4-2\sqrt{3})}{2}=\frac{3\times 2(2-\sqrt{3})}{2}=\boxed{6-3\sqrt{3}}$$ گزینه ۱

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$$A=\sqrt{x+a}\qquad A\times B=2\qquad A+B=?$$

$$B=\sqrt{x-4}\qquad (A+B)(A-B)=2?\rightarrow A^{2}-B^{2}=2?\rightarrow x+a-x+4=2?\rightarrow ?=\frac{a+6}{2}$$

$$\Rightarrow\sqrt{x-4}+\sqrt{x+a}-2=A+B-2=?-2=\frac{a+6}{2}-\frac{6}{2}=\boxed{\frac{a}{2}}$$