نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ..۱/۲.. کلاس ....

$(1!+3!+5!+\dots+25!)(2!+4!+6!+\dots+26!)=x$ $\underbrace{(1+6+120+\dots)}_{\text{رقم یکان }7}\underbrace{(2+24+720+\dots)}_{\text{رقم یکان }6}\Rightarrow x \Rightarrow \boxed{\text{رقم یکان } x = 2}$	۱
الف) $\underbrace{\sqrt[4]{(4+\sqrt7)^{-1}}}\times\underbrace{\sqrt{1+\sqrt7}}$ $\sqrt[4]{\frac{1}{4+\sqrt7}}\times\sqrt[4]{1+7+2\sqrt7}=\sqrt[4]{\frac{2(4+\sqrt7)}{4+\sqrt7}}=\boxed{\sqrt[4]{2}}$ ب) $\left(\frac{\sqrt2+\sqrt5}{\sqrt{10}+2}\right)\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)=\left(\frac{\sqrt2+\sqrt5}{\sqrt{10}+2}\times\frac{\sqrt{10}-2}{\sqrt{10}-2}\right)\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)=\frac{3\sqrt2}{6}\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)$ $=\frac{-2}{2}=\boxed{-1}$	۲
الف) $\frac{\sqrt8+\sqrt{27}}{5-\sqrt6}-2\left(\sqrt[4]{9}-1\right)^{-1}$ $\frac{\sqrt8+\sqrt{27}}{5-\sqrt6}\times\frac{5+\sqrt6}{5+\sqrt6}-\frac{2}{\sqrt3-1}\times\frac{\sqrt3+1}{\sqrt3+1}=\frac{19\sqrt3+19\sqrt2}{19}-\frac{2+2\sqrt3}{2}$ $\sqrt3+\sqrt2-1-\sqrt3=\boxed{-1+\sqrt2}$ ب) $\frac{\sqrt{27}-1}{4+\sqrt3}+(2-\sqrt3)^{-1}$ $\frac{\sqrt{27}-1}{4+\sqrt3}\times\frac{4-\sqrt3}{4-\sqrt3}+\frac{1}{2-\sqrt3}\times\frac{2+\sqrt3}{2+\sqrt3}=\frac{-13+13\sqrt3}{13}+\frac{2+\sqrt3}{1}$ $\Rightarrow -1+\sqrt3+2+\sqrt3=\boxed{1+2\sqrt3}$	۳
الف) $\frac{\sqrt{1+\sqrt3}+\sqrt{\sqrt3-1}}{\sqrt{\sqrt3-\sqrt2}}-2$ توان ۲ $2\sqrt3+2\sqrt2=2(\sqrt3+\sqrt2)$ $\frac{\sqrt{1+\sqrt3+\sqrt3-1+2\sqrt{3-1}}}{\sqrt{\sqrt3-\sqrt2}}\times\frac{\sqrt{\sqrt3+\sqrt2}}{\sqrt{\sqrt3+\sqrt2}}=\frac{(\sqrt2+\sqrt6)^2}{1}\Rightarrow\sqrt4+\sqrt6$ $\sqrt4+\sqrt6-2=\boxed{\sqrt6}$ ب) $\sqrt[3]{\sqrt[4]{2^8}}\times\sqrt[4]{162}\times\sqrt{4\sqrt[6]{2}}$ $\sqrt[12]{2^8}\times\sqrt[4]{3^4\times2}\times\sqrt[12]{2^{13}}=3\times\sqrt[12]{2^{8+3+13}}$ $\Rightarrow 3\times2^2=\boxed{12}$	۴
$\frac{3^x+3^{x+1}+3^{x+2}+3^{x+3}+3^{x+4}+3^{x+5}}{2^{x-2}+2^{x-1}+2^x+2^{x+1}+2^{x+2}+2^{x+3}}=\frac{3^x(1+3+9+27+81+243)}{2^{x-2}(1+2+4+8+16+32)}=\frac{3^x(364)}{2^{x-2}(63)}=52$ $3^x(364)=\frac14\times52\times2^x(63)\Rightarrow 3^x\times\frac49=2^x\Rightarrow\boxed{x=2}$	۵

$(a^2+b^2-2ab)^2(a^2+b^2+2ab)^2 = (a-b)^4(a+b)^4 = (a^2-b^2)^4 = \left(\sqrt{\sqrt6-2}-\sqrt{\sqrt6+2}\right)^4 = \left(\sqrt6-2+\sqrt6+2-2\sqrt2\right)^2$ ۶

$\Rightarrow (2\sqrt6-2\sqrt2)^2 = 24+8-16\sqrt3 = 16(2-\sqrt3) = t(2-\sqrt3) \Rightarrow \boxed{t=16}$

$a=\sqrt[4]{7-4\sqrt3} = \sqrt{\sqrt4-\sqrt3}$ $\quad (a+\frac1a+\sqrt2)^2(a+\frac1a-\sqrt2)^2 = \left((a+\frac1a)^2-2\right)^2 = (a^2+\frac1{a^2}+2-2)^2$ ۷

$a^4+\frac1{a^4}+2 = 7-4\sqrt3+\frac{1}{7-4\sqrt3}\times\frac{7+4\sqrt3}{7+4\sqrt3}+2 = 7-4\sqrt3+7+4\sqrt3+2 = 16 = 2^t \Rightarrow \boxed{t=4}$

$A=\sqrt[5]{4\sqrt[3]{16}}\,(\frac12)^{-\frac43} = \sqrt[15]{2^{10}}\times\sqrt[3]{2^4} = \sqrt[3]{2^6} = 4$ ۸

$(2A)^{-\frac13} = (2^3)^{-\frac13} = \boxed{\frac12}$

$\sqrt[7]{a} = 27\times\sqrt[7]{a^{15}} \Rightarrow \sqrt[7]{3^{21}\times a^{15}}$ ۹

$\Rightarrow a = 3^{21}\times a^{15} \Rightarrow a^{14} = 3^{-21} \Rightarrow a = \frac{1}{\sqrt{3^3}}$

$\frac{\sqrt{3^3}-3}{1+\sqrt3}\times\frac{1-\sqrt3}{1-\sqrt3} = \frac{-2(6-3\sqrt3)}{-2} = \boxed{3(2-\sqrt3)}$

$\left.\begin{array}{l}\sqrt{x+a}-\sqrt{x-4}=2\\ \sqrt{x+a}+\sqrt{x-4}=A\end{array}\right\}$ $x+a-x+4=2A=a+4 \Rightarrow A=\frac{a+4}{2}$ ۱۰

$\sqrt{x+a}+\sqrt{x-4}-2 = \frac{a+4}{2}-2 = \boxed{\frac a2}$

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