نام و نام خانوادگی ......تینا حیات داودی...... پاسخنامه تشریحی تکلیف شماره ...۲۱... کلاس ...دهم دختر ب پنجشنبه...

۲۰

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$(1!+3!+5!+\dots+25!)(2!+4!+6!+\dots+26!)$

$1,\ 6,\ 0,\ 0,\ 0\dots0 \qquad 2,\ 4,\ 0,\ 0$

یکان: ۱

یکان عبارت: $7\times6\to42\to\boxed{2}$

۲

الف) $\sqrt[4]{(4+\sqrt7)^{-1}}\sqrt{1+\sqrt7}=\sqrt[4]{\frac{4-\sqrt7}{9}(1+\sqrt7)^2}=\sqrt[4]{\frac{4-\sqrt7}{9}(8+2\sqrt7)}=\sqrt[4]{\frac{32-\cancel{8\sqrt7}+\cancel{8\sqrt7}-14}{9}}=\boxed{\sqrt[4]{2}}$

$\frac{1}{4+\sqrt7}=\frac{4-\sqrt7}{9}$

ب) $\frac{(\sqrt2+\sqrt5)}{\sqrt{10}+2}\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)=\frac{\sqrt2}{2}\times-\sqrt2=\boxed{-1}$

$\frac{(\sqrt2+\sqrt5)(\sqrt{10}-2)}{6}=\frac{\cancel{2\sqrt5}-2\sqrt2+5\sqrt2-\cancel{2\sqrt5}}{6}=\frac{\sqrt2}{2}$

$A=\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}$

$A^2=3-\cancel{\sqrt5}+3+\cancel{\sqrt5}-2\sqrt{9-5}$

$A^2=6-4=2 \qquad A=-\sqrt2$

۳

الف) $\frac{\sqrt8+\sqrt{27}}{5-\sqrt6}-2\left(\sqrt[4]{9}-1\right)^{-1}=\sqrt2+\cancel{\sqrt3}-\cancel{\sqrt3}-1=\boxed{\sqrt2-1}$

$\frac{1}{\sqrt3-1}=\frac{\sqrt3+1}{2}$

$\frac{(2\sqrt2+3\sqrt3)(5+\sqrt6)}{19}=\frac{10\sqrt2+4\sqrt3+15\sqrt3+9\sqrt2}{19}=\boxed{\sqrt2+\sqrt3}$

ب) $\frac{\sqrt{27}-1}{4+\sqrt3}+(2-\sqrt3)^{-1}=\frac{3\sqrt3-1}{4+\sqrt3}+2+\sqrt3=\frac{(3\sqrt3-1)(4-\sqrt3)}{13}+2+\sqrt3=\boxed{2\sqrt3+1}$

$\frac{1}{2-\sqrt3}=\frac{2+\sqrt3}{1}$

$=\frac{12\sqrt3-9-4+\sqrt3}{13}=\sqrt3-1$

۴

الف) $\frac{\sqrt{1+\sqrt3}+\sqrt{\sqrt3-1}}{\sqrt{\sqrt3-\sqrt2}}-2$

$A=\sqrt{1+\sqrt3}+\sqrt{\sqrt3-1}$

$A^2=\cancel{1}+\cancel{\sqrt3}+\cancel{\sqrt3}-\cancel{1}+2\sqrt2$

$A^2=2\sqrt3+2\sqrt2$

$A=\sqrt2\times\sqrt{\sqrt3+\sqrt2}$

حل $\frac{\sqrt2\times\sqrt{(\sqrt3+\sqrt2)^2}}{1}-2=$

$\sqrt2(\sqrt3+\sqrt2)-2=\sqrt6+2-2=\boxed{\sqrt6}$

ب) $\sqrt[4]{\sqrt[3]{2^8}}\times\sqrt[4]{162}\times\sqrt{\sqrt[6]{2}}=2^{\frac23}\times2^{\frac14}\times3\times2\times2^{\frac1{12}}=3\times2^{\frac{8+12+1+3}{12}}=$

$162=2\times3^4$

$3\times2^2=\boxed{12}$

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$\frac{3^x+3^{x+1}+3^{x+2}+3^{x+3}+3^{x+4}+3^{x+5}}{2^{x-2}+2^{x-1}+2^x+2^{x+1}+2^{x+2}+2^{x+3}}=52$

$\frac{3^x(1+3+9+27+81+243)}{2^{x-2}(1+2+4+8+16+32)}=52$

$\frac{3^x(\cancel{364})}{2^{x-2}(\cancel{63})}=52 \qquad 2^2\times13=52$

$3^x=9\times2^{x-2}$

$3^{x-2}=2^{x-2}$

$x-2=0$

$x=\boxed{2}$

$a=\sqrt[4]{\sqrt{6}-2}$ $\quad b=\sqrt[4]{\sqrt{6}+2}$ $\quad A=\left(\sqrt[4]{\sqrt{6}-2}\right)^2-\left(\sqrt[4]{\sqrt{6}+2}\right)^2$

$A=\sqrt{\sqrt{6}-2}-\sqrt{\sqrt{6}+2}$

$(a^2+b^2-2ab)^2(a^2+b^2+2ab)^2=t(2-\sqrt{3})$ $\quad A^2=\sqrt{6}\cancel{-2}+\sqrt{6}\cancel{+2}-2\sqrt{2}$

$(a^2-b^2)^4=(a-b)^4(a+b)^4=t(2-\sqrt{3})$ $\quad A^2=2(\sqrt{6}-\sqrt{2})=2\sqrt{2}(\sqrt{3}-1)$

$A^4=8(4-2\sqrt{3})=16(2-\sqrt{3})$

$\boxed{t=16}$

(4) ✓ ۶

$a=\sqrt[4]{7-4\sqrt{3}}=\sqrt[4]{(2-\sqrt{3})^2}=\sqrt{2-\sqrt{3}}$ $\quad \frac{1}{2-\sqrt{3}}=\frac{2+\sqrt{3}}{1}$

$\left(a+\frac{1}{a}+\sqrt{2}\right)^2\left(a+\frac{1}{a}-\sqrt{2}\right)^2=2^t$ $\quad \left(a^2+\frac{1}{a^2}+\cancel{2}\cancel{-2}\right)^2=2^t$

$(2\cancel{-\sqrt{3}}+2\cancel{+\sqrt{3}})^2=16=2^4\Rightarrow \boxed{t=4}$

(4) ✓ ۷

$A=\sqrt[5]{4\sqrt[3]{16}}\quad \left(\frac{1}{2}\right)^{-\frac{4}{3}}$ $\quad A=2^{\frac{2}{5}}\times 2^{\frac{4}{15}}\times 2^{\frac{4}{3}}=2^{\frac{6+4+20}{15}}=2^2=4$

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

(4) ✓ ۸

$\sqrt[7]{a}=27a^{\frac{15}{7}}$ $\quad a^{\frac{1}{7}}=27a^{\frac{15}{7}}$ $\quad a^2=\frac{1}{27}\Rightarrow a=\frac{1}{\sqrt{27}}=\frac{1}{3\sqrt{3}}=\frac{\sqrt{3}}{9}$

$\frac{\frac{1}{a}-3}{1+\sqrt{3}}=\frac{\frac{9}{\sqrt{3}}-3}{1+\sqrt{3}}=\frac{3\sqrt{3}-3}{1+\sqrt{3}}=\frac{3(\sqrt{3}-1)}{1+\sqrt{3}}=\frac{3(\sqrt{3}-1)^2}{2}=$ ۹

$\frac{3(\cancel{3+1}^{\,4}-2\sqrt{3})}{2}=\frac{6(2-\sqrt{3})}{2}=\boxed{6-3\sqrt{3}}$

(4) ✓

$A=\sqrt{x+a}-\sqrt{x-4}=2$ $\quad B=\sqrt{x+a}+\sqrt{x-4}$

$\underset{2}{\underset{\downarrow}{A}}B=\left(\sqrt{x+a}\right)^2-\left(\sqrt{x-4}\right)^2=\cancel{x}+a-\cancel{x}+4=4+a$ ۱۰

$B=\frac{4+a}{2}=2+\frac{a}{2}$

$\sqrt{x+a}+\sqrt{x-4}-2=2+\frac{a}{2}-2=\boxed{\frac{a}{2}}$ (2) ✓