$$C=(a^2+b^2-2ab)^2(a^2+b^2+2ab)^2=((a-b)^2)^2((a+b)^2)^2=(a-b)^4(a+b)^4=\boxed{(a^2-b^2)^4}$$

$$C=t(2-\sqrt{3}) \Rightarrow (a^2-b^2)^4=t(2-\sqrt{3}) \Rightarrow 16(2-\sqrt{3})=t(2-\sqrt{3}) \Rightarrow \boxed{t=16}$$

$$\left.\begin{array}{l} a^2=\sqrt{\sqrt{6}-2} \\ b^2=\sqrt{\sqrt{6}+2} \end{array}\right\} \Rightarrow \left(\left(\sqrt{\sqrt{6}-2}-\sqrt{\sqrt{6}+2}\right)^2\right)^2=\left(\sqrt{6}-2+\sqrt{6}+2-2\sqrt{\underbrace{(\sqrt{6}-2)(\sqrt{6}+2)}_{6-4=2}}\right)^2=$$ 6

$$(2\sqrt{6}-2\sqrt{2})^2=24+8-16\sqrt{3}=32-16\sqrt{3}=16(2-\sqrt{3}) \Rightarrow$$

$$(a^2-b^2)^4=16(2-\sqrt{3})$$

2

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

$$\Rightarrow \left((\sqrt{2-\sqrt{3}})^2+\frac{1}{(\sqrt{2-\sqrt{3}})^2}+2-2\right)^2=\left(2-\sqrt{3}+\frac{1\,(2+\sqrt{3})}{\underbrace{(2-\sqrt{3})(2+\sqrt{3})}_{4-3=1}}\right)^2=(2-\sqrt{3}+2+\sqrt{3})^2 \Rightarrow$$

2

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

$$(4)^2=2^t \Rightarrow 2^4=2^t \Rightarrow \boxed{t=4}$$

$$A=\sqrt[5]{4\sqrt[3]{16}}\left(\frac{1}{2}\right)^{-\frac{4}{3}}=\sqrt[15]{2^6\times 2^4}\,(2)^{\frac{4}{3}}=2^{\frac{10}{15}=\frac{2}{3}}\times 2^{\frac{4}{3}}=2^{\frac{2+4}{3}}=2^{\frac{6}{3}}=2^2=4 \Rightarrow$$

$$\boxed{A=4} \Rightarrow (2\times 4)^{-\frac{1}{3}}=\sqrt[3]{\frac{1}{8}}=\frac{\sqrt[3]{1}}{\sqrt[3]{8}}=\boxed{\frac{1}{2}}$$ 8

2

$$\sqrt[7]{a}=\underset{\downarrow\,27}{3^3}\times\sqrt[7]{a^{15}} \Rightarrow \sqrt[7]{\frac{a}{a^{15}}}=3^3 \Rightarrow \frac{1}{a^{14}}=3^{21} \Rightarrow a^{14}=3^{-21} \Rightarrow a^2=3^{-3} \Rightarrow \boxed{a=\sqrt{\frac{1}{27}}}$$

2

$$B=\frac{1}{a}-3=\frac{1}{\frac{1}{\sqrt{27}}}-3=3\sqrt{3}-3=3(\sqrt{3}-1) \Rightarrow \overset{C}{\boxed{\frac{B}{(1+\sqrt{3})}}}=\frac{3(\sqrt{3}-1)(\sqrt{3}-1)}{(1+\sqrt{3})(\sqrt{3}-1)}=\frac{3(\sqrt{3}-1)^2}{3-1=2}$$ 9

$$\Rightarrow C=\frac{3(3+1-2\sqrt{3})}{2}=\frac{3(2(2-\sqrt{3}))}{2}=3(\underbrace{2-\sqrt{3}}_{4-2\sqrt{3}})=$$ عبارت $B \div 6-3\sqrt{3}$ برابر $1+\sqrt{3}$ است

2

$$(\sqrt{x+a}-\sqrt{x-4})(\sqrt{x+a}+\sqrt{x-4})=2(\sqrt{x+a}+\sqrt{x-4}) \Rightarrow$$

$$x+a-(x-4)=2\sqrt{x+a}+2\sqrt{x-4} \Rightarrow x+a-x+4=a+4=2\sqrt{x+a}+2\sqrt{x-4} \Rightarrow$$

$$2\sqrt{x+a}+2\sqrt{x-4}-a-4=0 \Rightarrow 2(\underbrace{\sqrt{x+a}+\sqrt{x-4}-2}_{B})=a \Rightarrow 2B=a \Rightarrow B=\frac{a}{2} \Rightarrow$$

صورت سوال: $\sqrt{x+a}+\sqrt{x-4}-2=\,?=B$

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

نام و نام خانوادگی ...امیرعلی عادل... ۲۰ پاسخنامه تشریحی تکلیف شماره ...۲۱... کلاس ...دهم B پسر...

۱

$2! = 2$

$2!+4! = 2\boxed{6}$

$2!+4!+6! = 74\boxed{6}$

$2!+4!+6!+8! = 4106\boxed{6}$

$2!+4!+6!+8!+10! = 366986\boxed{6}$

دلیل این هم مانند نکته قبل است ⇐

$1! = 1$

$1!+3! = \boxed{7}$

$1!+3!+5! = 12\boxed{7}$

$1!+3!+5!+7! = 516\boxed{7}$

$1!+3!+5!+7!+9! = 37396\boxed{7}$

← نکته دلیل اصلی این اتفاق این است که از ۵! به بعد ما عامل ۲ و ۵ را داریم که باعث تشکیل 10 و صفر در یکان می‌شود پس از ۵! به بعد ما یکان خود تغییری نمی‌کند

۲) رقم یکان عبارت ← $(\ldots\ldots 7)\times(\ldots\ldots 6) = \ldots\ldots 4 2$

۲

۲

الف) $\sqrt[4]{\frac{1\times(4-\sqrt7)}{(4+\sqrt7)\times(4-\sqrt7)}}\times\sqrt{1+\sqrt7} = \sqrt[4]{\frac{(4-\sqrt7)(1+\sqrt7)^2}{\underbrace{(16-7)}_{9}}} = \sqrt[4]{\frac{(4-\sqrt7)(4+\sqrt7)2}{9}} = \sqrt[4]{\frac{(16-7)2}{9}} = \boxed{\sqrt[4]{2}}$

$\sqrt{1+\sqrt7} = \sqrt[4]{(1+\sqrt7)^2} = \sqrt[4]{8+2\sqrt7 = 2(4+\sqrt7)}$

۲

ب) $\left(\underbrace{\frac{\sqrt2+\sqrt5}{\sqrt{10}+2}}_{x_1}\right)\left(\underbrace{\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}}_{x_2}\right) \Rightarrow$

$x_1 = \frac{(\sqrt2+\sqrt5)}{(\sqrt2\times\sqrt5)+(\sqrt2\times\sqrt2)} = \frac{(\sqrt2+\sqrt5)}{\sqrt2(\sqrt2+\sqrt5)} \Rightarrow x_1 = \frac{1}{\sqrt2}$

$\sqrt{A\pm\sqrt B} = \sqrt{\frac{A+\sqrt{A^2-B}}{2}} \pm \sqrt{\frac{A-\sqrt{A^2-B}}{2}}$

$A=3,\ B=5$

$x_2 = \sqrt{\frac{3+\sqrt4}{2}} - \sqrt{\frac{3-\sqrt4}{2}} = \sqrt{\frac52} - \sqrt{\frac12} \Rightarrow x_2 = \sqrt{\frac52}-\sqrt{\frac12}$

$x_1 = \sqrt{\frac52}+\sqrt{\frac12}$

$\left(\frac{1}{\sqrt2}\right)\left(\sqrt{\frac52}-\sqrt{\frac12}-\sqrt{\frac52}-\sqrt{\frac12}\right) = \frac{1}{\sqrt2}\times\frac{-2}{\sqrt2} = \boxed{-1}$

۳

الف) $\frac{(2\sqrt2+3\sqrt3)(5+\sqrt6)}{(5-\sqrt6)(5+\sqrt6)} - 2(\sqrt3-1)^{-1} = \frac{10\sqrt2+15\sqrt3+9\sqrt2+4\sqrt3}{\underbrace{(25-6)}_{19}} - \frac{2(\sqrt3+1)}{(\sqrt3-1)(\sqrt3+1)} = \frac{19(\sqrt2+\sqrt3)}{19} - \frac{2(\sqrt3+1)}{2}$

$= \sqrt2+\sqrt3-\sqrt3-1 = \boxed{\sqrt2-1}$

قسمت ب سوال ۳

$\frac{(3\sqrt3-1)(4-\sqrt3)}{(4+\sqrt3)(4-\sqrt3)} + \frac{1\times(2+\sqrt3)}{(2-\sqrt3)(2+\sqrt3)} = x_1$

$x_1 = \frac{-13+13\sqrt3}{13} + (2+\sqrt3) = \sqrt3-1+2+\sqrt3 = \boxed{2\sqrt3+1}$ جواب

قسمت الف سوال ۴

$\underbrace{\frac{\sqrt{1+\sqrt3}+\sqrt{\sqrt3-1}}{\sqrt{\sqrt3-\sqrt2}}}_{A} - 2 = A-2 =$

$A^2 = \frac{1+\sqrt3+\sqrt3-1+2\sqrt{(\sqrt3-1)(\sqrt3+1)}\,(\sqrt3+\sqrt2)}{(\sqrt3-\sqrt2)(\sqrt3+\sqrt2)} \Rightarrow$

۲

$A^2 = \frac{(2\sqrt3+2\sqrt2)(\sqrt3+\sqrt2)}{3-2} = \frac{2(\sqrt3+\sqrt2)^2}{1} \Rightarrow$

$A = \sqrt{2(\sqrt3+\sqrt2)^2} = (\sqrt3+\sqrt2)\sqrt2 = \boxed{\sqrt6+2}$

$\sqrt6+2-2 = \boxed{\sqrt6}$

قسمت ب سوال ۴

$\underbrace{2^{\frac{8}{12}}}_{\sqrt[4]{\sqrt[3]{2^8}}}\times\underbrace{(3^4\times2)^{\frac14}}_{\sqrt[4]{162}}\times\underbrace{(2^{12}\times2)^{\frac{1}{12}}}_{\sqrt[4]{\sqrt[3]{2^{13}}}} = 2^{\frac{8+13}{12}}\times3^{\frac44} = 2^2\times3 = 12$

جواب نهایی: $12 = 2^2\times3$

۵

$\frac{3^x(1+3^1+3^2+3^3+3^4+3^5)}{2^{x-2}(1+2^1+2^2+2^3+2^4+2^5)} = \frac{3^x(1+3+9+27+81+243)2^2}{2^x(1+2+4+8+16+32)} = \frac{3^x\times364\times4}{2^x\times63} = 52 \Rightarrow$

$3^2=9,\ 3^3=27,\ 3^4=81,\ 3^5=243$

$2^2=4,\ 2^3=8,\ 2^4=16,\ 2^5=32$

$2^{x-2} = \frac{2^x}{2^2}$

۲

$\left(\frac32\right)^x\times\frac{\overset{7}{\cancel{364}}\times4}{63} = \overset{1}{\cancel{52}} \Rightarrow \left(\frac32\right)^x = \frac{\cancel{63}^{\,9}}{\cancel{28}_{\,4}} = \left(\frac32\right)^2 \Rightarrow \boxed{x=2}$

جواب نهایی: $\boxed{x=2}$