نام و نام خانوادگی ...ملودی میرحسین زاده....... پاسخنامه تشریحی تکلیف شماره ۱۲...... کلاس دهم ریاضی.........

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رقم یکان اعداد ۵!، ۶!، ... به علت وجود عوامل ۲ و ۵ صفر است.

$$\Rightarrow (\underbrace{1!+3!}_{1+6=7}+\dots)(\underbrace{2!+4!}_{2+24=26}+\dots) = 7\times 6 = 42$$

$\boxed{2}$

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الف)
$$\sqrt[4]{\frac{1}{4+\sqrt7}\times\frac{(4-\sqrt7)}{(4-\sqrt7)}}\times\sqrt[4]{(1+\sqrt7)^2}\to\sqrt[4]{8+2\sqrt7}$$

$$=\sqrt[4]{\frac{(4-\sqrt7)}{9}\times 2\times(4+\sqrt7)}$$

$$=\sqrt[4]{\frac{9}{9}\times 2}=\boxed{\sqrt[4]{2}}$$

$(4-\sqrt7)(4+\sqrt7)=9$

$$\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)^2=3-\sqrt5+3+\sqrt5$$
$$-2\sqrt{9-5}=6-4=2\to \text{عبارت}=\sqrt2$$

چون عبارت $<0 \to -\sqrt2$

$$\frac{\sqrt2+\sqrt{10}}{\sqrt2(\sqrt5+1)}\times(-\sqrt2)... = \boxed{-1}$$

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$$\frac{\sqrt8+\sqrt{27}}{\underbrace{5-\sqrt6}_{19}}\times\frac{(5+\sqrt6)}{(5+\sqrt6)} - 2\times\frac{1\times(\sqrt3+1)}{\underbrace{\sqrt3-1}_{2}(\sqrt3+1)}=\frac{10\sqrt2+2\sqrt{12}+15\sqrt3+3\sqrt{18}}{19}$$

$$\frac{19\sqrt3+19\sqrt2}{19}-\sqrt3-1=\boxed{\sqrt2-1}$$

الف)
$$\frac{3\sqrt3-1}{4+\sqrt3}\times\frac{4-\sqrt3}{4-\sqrt3}=\frac{13\sqrt3-13}{13}$$
$$=\sqrt3-1+2+\sqrt3=\boxed{1+2\sqrt3}$$
$$\frac{1}{2-\sqrt3}\times\frac{2+\sqrt3}{2+\sqrt3}=2+\sqrt3$$

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الف) $(\text{عبارت})^2\to\frac{2\sqrt{12}+\sqrt3+2\sqrt2}{\sqrt3-\sqrt2}$

$$\frac{2(\sqrt2+\sqrt3)(\sqrt3+\sqrt2)}{\sqrt3-\sqrt2\times(\sqrt3+\sqrt2)}=2(3+2+2\sqrt6)$$

$=10+4\sqrt6\to(2+\sqrt6)^2\to$ عبارت $=\sqrt6+2$ چون مثبت

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

ب)
$$2^{\frac{9}{12}}=\frac{3}{4}\times\sqrt[4]{3}\times\sqrt[4]{2}\times 2\times\sqrt[12]{2}$$

$$=2^{\frac{9}{12}}\times3\times2^{\frac{3}{12}}\times2 \quad \frac{9}{12}+\frac{3}{12}=\frac{12}{12}=1$$

$$2\times2\times3=12$$

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$$\frac{3^n(1+3+9+27+81+243)}{\frac{2^n}{4}(\underbrace{1+2+4+8+16+32}_{63})}=52$$

$\left(\frac{3}{2}\right)^n$

$$\frac{3^n}{2^n}=\frac{9\times7\times13}{91\times4}=\frac{9}{4}\Rightarrow\boxed{n=2}$$

$((a-b)^2)^2((a+b)^2)^2 = (a^2-b^2)^4$ $a^2 \to \sqrt{\sqrt{20}+12}$ $\quad b^2 \to \sqrt{\sqrt{20}-2}$ $\quad = \sqrt{4} ... - 2\sqrt{\frac{...-4}{2}}$ $\left(\left(4\sqrt{3}-\sqrt{2}\right)\right)^2 = 4^2(\sqrt{3}-\sqrt{2})^2 = 4(\cancel{3+2}-4\sqrt{6}) = 16(5-\sqrt{6})$ $4(2-\sqrt{3}) = 16(2-\sqrt{3})$ $\quad k=16$	۶
$\left(\left(a+\frac{1}{a}\right)^2-2\right)^2 = a^4+\frac{1}{a^4}+2 = 2^c \to 16=2^c$ $a^2+\frac{1}{a^2}\pm 2$ $\quad 7-4\sqrt{3}$ $\quad \frac{1}{7-4\sqrt{3}}\times\frac{7+4\sqrt{3}}{7-4\sqrt{3}\times(7+4\sqrt{3})} \to 49-48=1$ $\quad \boxed{c=4}$	۷
$\sqrt[5]{2^2\times 2^{\frac{4}{3}}} = \sqrt[5]{2^{\frac{10}{3}}} = 2^{\frac{2}{3}}\times 2^{\frac{4}{3}} = 2^{\frac{6}{3}} = 4 = A$ $(8)^{-\frac{1}{3}} = \frac{1}{2}$	۸
$a^{\frac{1}{7}} = 27\times a^{\frac{15}{7}} \Rightarrow 1 = 3^3\times a^{\frac{14}{7}} \Rightarrow a^{-2} = 27$ $3^{\frac{3}{2}}$ $\quad \frac{1}{a} = 3\sqrt{3}$ $\frac{3\sqrt{3}-3}{1+\sqrt{3}} \times \frac{(\sqrt{3}-1)}{(\sqrt{3}-1)} = 3(\sqrt{3}-1)\times(\sqrt{3}-1) = \frac{3(3+1-2\sqrt{3})}{2} = \frac{3(4-2\sqrt{3})}{2} = \boxed{6-3\sqrt{3}}$	۹
$\sqrt{x+a}-\sqrt{x-4}\times\frac{\sqrt{x+a}+\sqrt{x-4}}{\sqrt{x+a}+\sqrt{x-4}} = \frac{x+a-x+4}{\sqrt{x+a}+\sqrt{x-4}} = 2$ $\sqrt{x+a}+\sqrt{x-4} = \frac{a+4}{2} \to \frac{a}{2}+\cancel{2}-\cancel{2} = \boxed{\frac{a}{2}}$	۱۰