به نام او — ستاره خدایاری

۱) $(1!+3!+5!+\ldots+25!)(2!+4!+6!+\ldots+26!)$

$\underbrace{1 \quad 6}_{7}$ ، 120 ، $\underbrace{\ldots}_{\text{از اینجا به بعد یکان همشون صفره}}$

یه چیزی با یکان ۷

$\underbrace{2 \quad 24}_{6}$ ، یکان صفر

یه چیزی با یکان ۶

$6\times 7 = 42$

$\boxed{\text{کل عبارت میشه یه چیزی با یکان ۲}}$

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

$\sqrt[4]{\frac{1}{4+\sqrt7}} \times \sqrt[4]{\frac{8+2\sqrt7}{2}}$

ب) $\left(\frac{\cancel{\sqrt2+\sqrt5}}{\cancel{\sqrt{10}+2}}\right)\left(\sqrt{3-\sqrt5}-\sqrt{3+\sqrt5}\right)^2$ ، $\sqrt2$

$\sqrt2(\sqrt2+\sqrt5) = 2+\sqrt{10}$

$\frac{1}{\cancel{2}}\times\left(\underbrace{3-\cancel{\sqrt5}+3+\cancel{\sqrt5}-2\sqrt{\frac{9-5}{2}}}_{\frac{6-4}{\cancel{2}}}\right) = 1 \xrightarrow{\sqrt{\ }} \boxed{\pm 1} \rightarrow$

احتمالاً فقط ۱- درسته چون حاصل پرانتز دوم منفی است

۳) $\frac{\overset{2\sqrt2}{\sqrt8}+\overset{3\sqrt3}{\sqrt{27}}}{5-\sqrt6} - 2\left(\sqrt[4]{9}-1\right)^{-1}$

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

$\frac{5+\sqrt6}{5+\sqrt6}\times\frac{2\sqrt2+3\sqrt3}{5-\sqrt6} - \frac{2}{\sqrt3-1}\times\frac{\sqrt3+1}{\sqrt3+1} = \frac{\overset{19\sqrt2+19\sqrt3}{10\sqrt2+15\sqrt3+4\sqrt3+9\sqrt2}}{\cancel{19}} = \sqrt2+\sqrt3-\frac{\cancel{2}\sqrt3+\cancel{2}}{\cancel{2}}$

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

ج) $\frac{4-\sqrt3}{4-\sqrt3}\times\frac{\overset{3\sqrt3-1}{\sqrt{27}-1}}{4+\sqrt3} + (2-\sqrt3)^{-1}$

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

$\frac{12\sqrt3-4-9+\sqrt3}{13} = \frac{\cancel{13}\sqrt3-\cancel{13}}{\cancel{13}} = \sqrt3-1+2+\sqrt3 = 2\sqrt3+1$

ست ریشه‌ها یاری

سه نمره ۲

۲) $\sqrt{\dfrac{1+\sqrt{2}\quad+\sqrt{\sqrt{3}-1}}{}}-2$

$\times\sqrt{\sqrt{3}+\sqrt{2}}$

$\cancel{1}+\sqrt{2}^2+\sqrt{2}\cancel{-1}+2\sqrt{3-1}$

$\sqrt{\dfrac{2\sqrt{3}+2\sqrt{2}}{\sqrt{3}-\sqrt{2}}\times\dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}}}=\sqrt{\dfrac{2\times(3+2+2\sqrt{6})}{1}}=\sqrt{10+4\sqrt{6}}=\sqrt{(2+\sqrt{6})^2}=\cancel{2}+\sqrt{6}\cancel{-2}=\sqrt{6}$

ن) $\sqrt[4]{\sqrt[3]{2^8}}\times\sqrt[3]{162}\times\sqrt{4\sqrt[3]{2}}=12$

$\frac{8}{12}=\frac{2}{3}$

$2^{\frac{2}{3}}\times 3\ 2^{\frac{1}{4}}\times 2\times 2^{\frac{1}{12}}$

$6\times 2^{\frac{8+3+1}{12}}$

ک) $\dfrac{3^n+3^{n+1}+3^{n+2}+3^{n+3}+3^{n+4}+3^{n+5}}{2^{n-2}+2^{n-1}+2^n+2^{n+1}+2^{n+2}+2^{n+3}}=52\times\dfrac{\cancel{63}\ 9}{\cancel{364}\ 4}$

$\dfrac{3^n(\overbrace{1+3+9+27+81+243}^{364})}{2^{n-2}(1+\underbrace{2+4+8+16+32}_{63})}$

$\dfrac{3^n\times4}{2^n}=9\to\dfrac{3^n}{2^n}=\dfrac{9}{4}$

$n=2$

ی) $b=\sqrt[4]{\sqrt{6}+2}$ و $a=\sqrt[4]{\sqrt{6}-2}$

$(a^2+b^2-2ab)^2(a^2+b^2+2ab)^2=+(2\sqrt{3})$

$(\sqrt{\sqrt{6}-2}+\sqrt{\sqrt{6}+2}-2\sqrt[4]{2})(\sqrt{\sqrt{6}-2}+\sqrt{\sqrt{6}+2}+2\sqrt[4]{2})$

$(\sqrt{\sqrt{6}-2}+\sqrt{\sqrt{6}+2})^2-4\sqrt{2}$

$\sqrt{6}\cancel{-2}+\sqrt{6}\cancel{+2}+2\sqrt{2}$

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

$(2\sqrt{6}-2\sqrt{2})^2$

$24+8-8\sqrt{12}$

$32-16\sqrt{3}$ $+=16$

$16(2-\sqrt{3})$

SUBJECT

Year: Month: Day:

سارینا خدایاری

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

$a = \sqrt{2-\sqrt{3}}$

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

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

$2-\sqrt{3} + \frac{1}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}$

$2-\cancel{\sqrt{3}} + 2 + \cancel{\sqrt{3}} = 4 = 2^{t} \qquad t = 2$

8) $A = \sqrt[5]{4\sqrt[3]{16}\left(\frac{1}{2}\right)^{-\frac{3}{2}}}$

$2^{\frac{2}{5}} \times 2^{\frac{4}{15}} \times 2^{\frac{3}{2}}$

$2^{\frac{20+9+4}{15}} = 4 = A$

$(8)^{-\frac{1}{3}}$

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

9) $\sqrt[7]{a} = 27 \times a^{\frac{15}{7}}$ $\qquad a^{\frac{1}{7}-\frac{15}{7}} = 27$

$a^{-2} = 27$

$\frac{\frac{1}{a} - 3}{1+\sqrt{3}} = ?$ $\qquad a^{2} = \frac{1}{27} \qquad a = \frac{1}{\sqrt{27}}$

$\frac{\sqrt{27}-3}{1+\sqrt{3}} = \frac{3\sqrt{3}-3}{1+\sqrt{3}}$

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

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

$\times \sqrt{x+a} + \sqrt{x-4} \qquad \cancel{x}+a - \cancel{x}+4 = a+4 = 2 \times x$

$\underbrace{\sqrt{x+a} + \sqrt{x-4}}_{x} - 2 \qquad x = \frac{a+4}{2}$

$\frac{a+4}{2} - 2 = \frac{a+\cancel{4-4}}{2} = \boxed{\frac{a}{2}}$

Senobar