دهم B دختر

سری ۲۱

مارینا امین الرعایا

page: ( )

Subject:

Year: Month: Day:

۱-

$$\underbrace{(\underbrace{1+6}_{\text{یکان ۷}}+\underbrace{0+0+0+0}_{\text{یکان ۰}})}_{\text{یکان ۷}}\underbrace{(\underbrace{2+4}_{\text{یکان ۶}}+\underbrace{0+0+0+0}_{\text{یکان ۰}})}_{\text{یکان ۶}} \Rightarrow 6\times 7 = 42$$

یکان ۲ است

۲-

الف) $\sqrt[4]{(4+\sqrt{7})^{-1}}\sqrt{1+\sqrt{7}} \Rightarrow \sqrt[4]{(4+\sqrt{7})^{-1}}\times\sqrt[4]{(1+\sqrt{7})^{2}} = \sqrt[4]{\frac{1+2\sqrt{7}+7}{4+\sqrt{7}}} = \sqrt[4]{\frac{2\cancel{(4+\sqrt{7})}}{\cancel{4+\sqrt{7}}}} = \boxed{\sqrt[4]{2}}$

$\sqrt[2]{1+\sqrt{7}} \Rightarrow \sqrt[4]{(1+\sqrt{7})^{2}}$

$\cancel{2}-\cancel{\sqrt{5}}-\cancel{2}+\cancel{\sqrt{5}}=0$

ب) $\left(\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2}\right)\left(\frac{\sqrt{3-\sqrt{5}}-\sqrt{3+\sqrt{5}}}{\sqrt{3-\sqrt{5}}-\sqrt{3+\sqrt{5}}}\right)\left(\sqrt{3-\sqrt{5}}+\sqrt{3+\sqrt{5}}\right) = \frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2}\times 0 = \boxed{0}$

۳-

الف) $\frac{\sqrt{8}+\sqrt{27}}{3-\sqrt{6}} - 2(\sqrt{9}-1)^{-1} \Rightarrow \frac{(\sqrt{2}+\sqrt{3})\cancel{(3-\sqrt{6})}}{\cancel{3-\sqrt{6}}} \Rightarrow \sqrt{2}+\sqrt{3}-2\sqrt{3}+2 = \boxed{\sqrt{2}-\sqrt{3}+2}$

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

ب) $\frac{\sqrt{27}-1}{4+\sqrt{3}} + (2-\sqrt{3})^{-1} \longrightarrow \frac{(\sqrt{3}-1)\cancel{(4+\sqrt{3})}}{\cancel{4+\sqrt{3}}} + (2-\sqrt{3})^{-1} = \frac{3\sqrt{3}-5}{2-\sqrt{3}}\times\frac{2+\sqrt{3}}{2+\sqrt{3}} =$

$\frac{6\sqrt{3}-10+9-5\sqrt{3}}{4-3} = \boxed{\sqrt{3}-1}$

۴-

الف) $\frac{\sqrt{1+\sqrt{3}}+\sqrt{\sqrt{3}-1}}{\sqrt{\sqrt{3}}-\sqrt{2}} - 2 = \frac{\left(\sqrt{1+\sqrt{3}}-\sqrt{\sqrt{3}-1}\right)^2}{\sqrt{3}-\sqrt{2}} = \frac{2\cancel{(3-\sqrt{3})}}{\cancel{(\sqrt{3}-\sqrt{3})}(\sqrt{3}-\sqrt{2})} = \frac{2(\sqrt{3}+\sqrt{2})}{3-2} = \boxed{2\sqrt{3}+2\sqrt{2}}$

همان عددی که به صورت رادیکال به مخرج رادیکال تقسیم شود

ب) $\sqrt[3]{\sqrt[4]{3^8}}\times\sqrt[4]{162}\times\sqrt[2]{4\sqrt[6]{2}} = 3^{\frac{8}{12}}\times 3\times 2^{\frac{1}{4}}\times 2\times 2^{\frac{1}{12}} = 2^{\frac{9}{12}}\times 2^{\frac{12}{12}}\times 2^{\frac{3}{12}}\times 3 = 2^{\frac{24}{12}}\times 3 =$

$2^2\times 3 = 4\times 3 = 12$

۵-

$$\frac{3^{x+2}+3^{x+1}+3^{x+2}+3^{x+3}+3^{x+4}+3^{x+5}}{2^{x-2}+2^{x-1}+2^{x}+2^{x+1}+2^{x+2}+2^{x+3}} = \frac{3^{x}\cancel{(1+3^{1}+3^{2}+3^{3}+3^{4}+3^{5})}}{2^{x}\cancel{(2^{-2}+2^{-1}+1+2^{1}+2^{2}+2^{3})}} =$$

$\frac{3}{4}+15$

$\frac{3^{x}(364)}{3^{x}(\frac{63}{4})} = 52 \longrightarrow \cancel{52}^{1}\times\frac{\cancel{63}^{9}}{4}\times 2^{x} = 3^{x}\cancel{(364)}^{\cancel{7}}$

$\frac{9}{4}\times 2^{x} = 3^{x}$

$\frac{9}{4} = \left(\frac{3}{2}\right)^{x} \Rightarrow \boxed{x=2}$

Arman

مارینا امین الرعایا

Subject:
Year: Month: Day: page: ( )

۶-

$a=\sqrt[4]{\sqrt{6}-2}$

$b=\sqrt[4]{\sqrt{6}+2}$

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

$(a-b)^4(a+b)^4=(a^2-b^2)^4=\left(\left(\sqrt{\sqrt{6}-2}-\sqrt{\sqrt{6}+2}\right)^2\right)^2=\sqrt{6}\cancel{-2}-2\sqrt{2}+\sqrt{6}\cancel{+2}=(2\sqrt{6}-2\sqrt{2})^2$

$24-8\sqrt{12}+8=32-8\sqrt{12}$

$32-8\sqrt{12}=t(2-\sqrt{3})\longrightarrow t=\dfrac{32-16\sqrt{3}}{2-\sqrt{3}}=\boxed{16}$

۷-

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

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

$a^4+2+\frac{1}{a^4}=7-4\sqrt{3}+\frac{1}{7-4\sqrt{3}}+2=7+\cancel{\frac{-28\sqrt{3}+49}{7-4\sqrt{3}}}+2=7-7+2=2$

-7

$2=2^t\longrightarrow\boxed{t=1}$

۸-

$A=\sqrt[5]{4\sqrt[3]{2^4\times2^4}}=2^{\frac{2}{5}}\times2^{\frac{8}{15}}=2^{\frac{6}{15}}\times2^{\frac{8}{15}}=2^{\frac{14}{15}}$

$(2A)^{\frac{-1}{3}}=2^{\frac{15}{15}}\times2^{\frac{14}{15}}=\left(2^{\frac{29}{15}}\right)^{\frac{-1}{3}}=\boxed{2^{-\frac{29}{45}}}=\sqrt[45]{2^{29}}$

۹-

$\sqrt[7]{a}=27\sqrt[7]{a^{15}}\longrightarrow 27=a^{\frac{1}{7}}\times a^{-\frac{15}{7}}=a^{-\frac{14}{7}}=a^{-2}=27$

$\frac{1}{a^2}=27\longrightarrow\frac{1}{a}=\sqrt{27}\longrightarrow\frac{1}{a}=3\sqrt{3}$

$\dfrac{\frac{1}{a}-3}{1+\sqrt{3}}=\dfrac{3\sqrt{3}-3}{1+\sqrt{3}}=\dfrac{3(\sqrt{3}-1)}{1+\sqrt{3}}\times\dfrac{\sqrt{3}-1}{\sqrt{3}-1}=\dfrac{3(\sqrt{3}-1)^2}{1-3}=\dfrac{3\times(\overset{4-2\sqrt{3}}{3-2\sqrt{3}+1})}{-2}=\dfrac{12-6\sqrt{3}}{-2}=$

$\boxed{-6+3\sqrt{3}}$

۱۰-

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

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