فاطمة موسى (٢٥)

١ـ [٤٣] ـ ٣ = (٢ + ٤ × ٣٤) (١ + ٦) بعدد ٥١

٣٦ ٧ تكون صفرات

٢ـ $\sqrt[4]{٢}$ ، ٢ (٤ + $\sqrt{٧}$) × $\sqrt[4]{\frac{١}{٤ + \sqrt{٧}}}$ = $\frac{(١ + \sqrt{٧})^٢}{٨ + ٢\sqrt{٧}}$ × $\sqrt[4]{\frac{١}{٤ + \sqrt{٧}}}$ الف

٨ = A ($\sqrt{٣ + \sqrt{٥}}$ ـ $\sqrt{٣ - \sqrt{٥}}$) ، $\frac{(\sqrt{٢} + \sqrt{٥})}{\sqrt{٢}(\sqrt{٥} + \sqrt{٣})}$ ب)

٢ ، ٤ ـ ٦

د (($\sqrt{٣} + \sqrt{٥}$)($\sqrt{٣} - \sqrt{٥}$) $\sqrt{}$) ٢ ـ (٣ + $\sqrt{٥}$ + ٣ ـ $\sqrt{٥}$) $\frac{١}{٢}$ = $A^٢$

٩ ـ ٥

$A^٢$ = ١ A = ±١

اتی رشل و تمیون

٣ـ $\frac{٢}{\sqrt{٣} - ١}$ ـ $\frac{(\sqrt{٢} + \sqrt{٣})(٢ + ٣ - \sqrt{٦})}{٥ - \sqrt{٦}}$ = $\frac{\sqrt{٢^٣} + \sqrt{٣^٣}}{٥ - \sqrt{٦}}$

$\sqrt{٣}$ ـ ١ ـ $\sqrt{٢}$ + $\sqrt{٣}$ = $\frac{٢(\sqrt{٣} + ١)}{٣ - ١}$ = $\frac{\sqrt{٣} + ١}{\sqrt{٣} + ١}$ × $\frac{٢}{\sqrt{٣} - ١}$

$\sqrt{٢}$ ـ ١

ب) $\frac{\sqrt{٣}-١}{٤+\sqrt{٣}} = \frac{(\sqrt{٣}-١)(٣+٧+\sqrt{٣})}{٤+\sqrt{٣}} + \frac{١}{٢-\sqrt{٣}}$

$\frac{١}{٢-\sqrt{٣}} \times \frac{٢+\sqrt{٣}}{٢+\sqrt{٣}} = \frac{٢+\sqrt{٣}}{١} = \sqrt{٣} - ١ + ٢ + \sqrt{٣} = ١ + ٢\sqrt{٣}$

٤ـ

الف) $A = \sqrt{١١+\sqrt{٣}} + \sqrt{\sqrt{٣}-١}$

$A^٢ = ١١+\sqrt{٣}+\sqrt{٣}-١+٢\left(\sqrt{(١١+\sqrt{٣})(\sqrt{٣}-١)}\right) = \frac{٢\sqrt{٣}+٢\sqrt{٢}}{\sqrt{٣}-\sqrt{٢}}$

$\frac{\sqrt{٣٣}-\sqrt{٣}}{٣-١}$

$A^٢ = \frac{\sqrt{٣}+٢\sqrt{٢}}{\sqrt{٣}-\sqrt{٢}} \times \frac{\sqrt{٣}+\sqrt{٢}}{\sqrt{٣}+\sqrt{٢}} = \frac{٢(\sqrt{٣}+\sqrt{٢})^٢}{٣-٢} = ٢(٥+٢\sqrt{٦})$

$A^٢ = ١٠+٤\sqrt{٦}$ $\quad A = \sqrt{(٤+\sqrt{٦})}$ $\quad ٢+\sqrt{٦} - ٢ = \sqrt{٦}$

ب) $٢^{\frac{٨}{١٢}} \times ٢^{\frac{١}{٤}} \times ٣ \times ٢^{\frac{١}{١٢}} \times ٣$

$٢^{\frac{١٢}{١٢}} \times ٢ \times ٢ = ٤ \times ٣ = ١٢$

٥ـ $\frac{٣^n \times (٧٢٨)^{[illegible]}}{٣^{n-١}(\frac{٦٣}{٩})} = \frac{\frac{٣^٦(٣^٦-١)}{٢}}{٣^{n-٢}(٣^٦-١)}$ $\quad$ مجموع تصاعد هندسی $\frac{a(q^n-١)}{q-١}$

$٣^٦ = (٣^٣)^٢ = ٧٢٩$

$\frac{٣^n}{٣^{n-١}} = [illegible] \times \frac{٩}{[illegible]}$ $\quad n=٣$

۶- $((a^2+b^2)^2 - 4a^2b^2)^2 = (a^4+b^4+2a^2b^2-4a^2b^2)^2$

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

$24+8-8\sqrt{12} = 32-16\sqrt{3} = 16(2-\sqrt{3}) = t(2-\sqrt{3})$

$\boxed{t=16}$

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

$\left(a^2+\frac{1}{a^2}+2-2\right)^2 = \left(a^2+\frac{1}{a^2}\right)^2 = a^4+\frac{1}{a^4}+2$

$7-4\sqrt{3} + \frac{1}{7-4\sqrt{3}} + 2 = 7-4\sqrt{3}+7+4\sqrt{3}+2 = \boxed{16}$

$\frac{1}{(2-\sqrt{3})^2} \times \frac{(2+\sqrt{3})^2}{(2+\sqrt{3})^2} = \frac{(2+\sqrt{3})^2}{(4-3)^2}$

۸- $2^{\frac{4}{15}} \times 2^{\frac{1}{5}} \times 2^{\frac{4}{3}} = 2^{\frac{30}{15}} = 2^2 = 4$

$(2\times4)^{-\frac{1}{3}} = \sqrt[3]{\frac{1}{8}} = \boxed{\frac{1}{2}}$

۹- $\left(27a^{\frac{15}{7}}\right)^7 = a$

$3^{21}a^{15} = a \qquad 3^{21} = a^{-14}$

$3^3 = a^{-2} \qquad 27 = \left(\frac{1}{a}\right)^2 \quad \pm\sqrt{27} = \frac{1}{a}$

لذا a مثبت است پس − غیرقابل قبول است

$$\frac{(\sqrt{2}-1)^2}{2} = \frac{(\sqrt{2}-1)^2}{1.\sqrt{2}} \cdot \frac{\sqrt{2}-1}{\sqrt{2}.1} = \frac{3-2\sqrt{2}}{1+\sqrt{2}}$$

$$(\sqrt{2}-2)^2 \; , \; \frac{(\sqrt{2}-2)^2}{2} = \frac{(2\sqrt{2}-1+2)^2}{2}$$

$$(\sqrt{n+a} - \sqrt{n-4} - 2)(\sqrt{n+a} + \sqrt{n-4} - 2) = 0$$

$$(\sqrt{n+a} - 2)^2 - (\sqrt{n-4})^2 = n+a+4-4\sqrt{n+a} - n+4 = 0$$

$$a+8-4\sqrt{n+a} = 0$$

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

$$\sqrt{n+a} = \sqrt{n-4} + 2 \; ; \; 2\sqrt{n-4}$$