

$$\left. \begin{array}{l} 1! = 1 \quad 2! = 2 \\ 3! = 6 \quad 4! = 24 \end{array} \right\} \rightarrow (7)(24) \rightarrow 168 \rightarrow 2$$

از انہی جہتیں $5! = \frac{0}{1} \quad 6! = \frac{0}{1}$ ✓

برای تبدیل: $\sqrt{(1+\sqrt{5})^2} \rightarrow \sqrt{1+5+2\sqrt{5}} \sim \sqrt{\frac{1+2\sqrt{5}}{4+\sqrt{5}}} = \sqrt{\frac{2(4+\sqrt{5})}{4+\sqrt{5}}} = \sqrt{2}$ (الف) ✓

ب) $\frac{(\sqrt{2}+\sqrt{5})(\sqrt{5}-2)}{10-4} \sim \frac{\frac{2\sqrt{5}}{\sqrt{20}} - 2\sqrt{2} + \frac{5\sqrt{2}}{\sqrt{20}} - 2\sqrt{5}}{6} = \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2}$ ✓

$\frac{\sqrt{2}}{2} (\sqrt{2-\sqrt{5}} - \sqrt{2+\sqrt{5}}) \frac{\sqrt{4-2\sqrt{5}} - \sqrt{4+2\sqrt{5}}}{2} \xrightarrow{\text{مکمل}} \sqrt{(\sqrt{5}-\sqrt{1})^2}$

$\Rightarrow \frac{(\sqrt{5}-\sqrt{1}) - (\sqrt{5}+\sqrt{1})}{2} = \frac{\sqrt{5}-1-\sqrt{5}-1}{2} = \frac{-2}{2} = -1$

الف) $\frac{(2\sqrt{2}+2\sqrt{3})(5+\sqrt{6})}{10\sqrt{2} + \frac{2\sqrt{3}}{\sqrt{2}} + 10\sqrt{3} + \frac{2\sqrt{6}}{\sqrt{2}}}$

$\frac{14\sqrt{2} + 14\sqrt{3}}{14} = \sqrt{2} + \sqrt{3} \quad \left[\frac{2}{2\sqrt{3}-1} \right] \times \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{2\sqrt{3}+2}{3-1} = \sqrt{3}+1$

$\sqrt{2} + \sqrt{3} - \sqrt{3} - 1 = \sqrt{2} - 1$ ✓

ب) $\frac{(2\sqrt{3}-1)}{4+\sqrt{3}} \times \frac{(4-\sqrt{3})}{4-\sqrt{3}} = \frac{12\sqrt{3}-4-4+\sqrt{3}}{16-3} = \frac{13\sqrt{3}-8}{13} = \sqrt{3}-1$

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

٢) ان $\frac{\sqrt{1+\sqrt{r}} + \sqrt{\sqrt{r}-1}}{\sqrt{\sqrt{r}-r}}$

$(\sqrt{1+\sqrt{r}} + \sqrt{\sqrt{r}-1})^r = A^r \rightarrow 1 + \sqrt{r} + \sqrt{r}-1 + r \left(\frac{\sqrt{r}-1}{r} \right) = \sqrt{r\sqrt{r}} + r\sqrt{r}$

$\sqrt{\frac{r\sqrt{r} + r\sqrt{r}}{\sqrt{r}-\sqrt{r}}} \times \frac{\sqrt{r}+\sqrt{r}}{\sqrt{r}+\sqrt{r}} \rightarrow \sqrt{\frac{4 + r\sqrt{4} + r\sqrt{4} + r}{r-r}} \rightarrow \sqrt{10 + r\sqrt{4}}$

$\sqrt{10 + r\sqrt{4}} \rightarrow \sqrt{(\sqrt{4} + \sqrt{r})^2} = \sqrt{4} + \sqrt{r} - r = \sqrt{4}$

✓

$\rightarrow r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} \times r^{\frac{1}{12}} = r^{\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12}} = r^1 = r$

٣) $\frac{r^x + r^x \times r + r^x \times r^2 + r^x \times r^3 + r^x \times r^4 + r^x \times r^5}{r^x \times r^{-4} + r^x \times r^{-3} + r^x + r^x \times r + r^x \times r^2 + r^x \times r^3}$

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

$r^x \times r^4 = r^4 \times r^x \times \frac{1}{r} \times r^4 \rightarrow \frac{r^x}{r^x} = \frac{r^4}{r^4} \rightarrow \left(\frac{r}{r} \right)^4 = \frac{r^4}{r^4}$

٤) $((a-b)^r)^r ((a+b)^r)^r \rightarrow (a-b)^{r^2} (a+b)^{r^2} = (a^r - b^r)^{r^2}$

$(\sqrt[3]{\sqrt{4}-r} - \sqrt[3]{\sqrt{4}+r})^3 \rightarrow (\sqrt{4}-r + \sqrt{4}+r - r\sqrt{4-r})^3$

$(r\sqrt{4}-r\sqrt{r})^3 \rightarrow \frac{r\sqrt{4}}{r^2} - \frac{r\sqrt{r}}{r^2} \rightarrow 14(r-\sqrt{r}) \rightarrow t = 14$

Genohar



$$\textcircled{v} \left(a + \frac{1}{a} + \sqrt{r}\right)^r \left(a + \frac{1}{a} - \sqrt{r}\right)^r \rightarrow \left(\left(a + \frac{1}{a}\right)^r - r\right)^r$$

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

$$v - r\sqrt{r} + \frac{1}{v - r\sqrt{r}} + r \rightarrow v - \cancel{r\sqrt{r}} + v + \cancel{r\sqrt{r}} + r = 19 = r \rightarrow r = 19$$

$$\textcircled{A} r^{\frac{r}{2}} \times r^{\frac{r}{10}} \times r^{\frac{r}{5}} = A \rightarrow A = r^{\frac{r}{2} + \frac{r}{10} + \frac{r}{5}} = r^r$$

$$(1)^{-\frac{1}{r}} \rightarrow (r^r)^{-\frac{1}{r}} = r^{-1} = \frac{1}{r}$$

$$\textcircled{1} \sqrt[r]{a} = r^v \times a^{\frac{1}{v}} \xrightarrow{(\cdot)^v} a = r^{rv} \times a^{1/v} \rightarrow a^{1/r} = r^{v-r} \rightarrow a^{1/r} = r^{-r}$$

$$\xrightarrow{(\cdot)^{1/r}} a = r^{\frac{-r}{1/r}} = \frac{r}{r} \rightarrow 4 - 3\sqrt{r}$$

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

$$r^{-\frac{r}{r}} = \frac{1}{r\sqrt{r}} \rightarrow (r\sqrt{r} - r) \rightarrow \frac{r(\sqrt{r} - 1)}{\sqrt{r} - 1} = r$$

$$\textcircled{10} \sqrt{x+a} = r + \sqrt{x-r} \xrightarrow{(\cdot)^r} x+a = \cancel{r^r} + \cancel{x-r} + r\sqrt{x-r} \Rightarrow \sqrt{x-r} = \frac{a}{r}$$

$$r + \sqrt{x-r} + \sqrt{x-r} - r \rightarrow r\sqrt{x-r} = r \times \frac{a}{r} = \frac{a}{r}$$