

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

رقم یکان صفر است چون ۲ و ۵ در هم ضرب می شوند

$$1 + 6 + \dots + 0 = \dots + 7$$

$$2 + 24 + \dots + 0 = \dots + 26$$

$$9 \times 7 = 63 \rightarrow \text{رقم یکان}$$

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

$$\frac{\sqrt{2} + \sqrt{5}}{\sqrt{5} + 2} \times \frac{\sqrt{10} - 2}{\sqrt{10} - 2} = \frac{\sqrt{20} + \sqrt{50} - \sqrt{10} - \sqrt{20}}{9} = \frac{\sqrt{2}}{3}$$

$$\frac{\sqrt{2}}{2} (\sqrt{2} - \sqrt{5} - \sqrt{2} + \sqrt{5}) = \frac{\sqrt{6} - 2\sqrt{5} - \sqrt{6} + 2\sqrt{5}}{2} = \frac{\sqrt{5} - 1 - \sqrt{5} - 1}{2} = \frac{-2}{2} = -1$$

$$\frac{2\sqrt{2} + 3\sqrt{3}}{5 - \sqrt{6}} - \frac{2}{\sqrt{2} - 1} \Rightarrow \frac{2}{\sqrt{2} - 1} \times \frac{\sqrt{2} + 1}{\sqrt{2} + 1} = \frac{2(\sqrt{2} + 1)}{2}$$

$$\frac{5 + \sqrt{6}}{5 + \sqrt{6}} \times \frac{2\sqrt{2} + 3\sqrt{3}}{5 - \sqrt{6}} = \frac{10\sqrt{2} + 15\sqrt{3} + 4\sqrt{2} + 9\sqrt{3}}{19} = \sqrt{2} + \sqrt{3}$$

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

$$\frac{\sqrt{2} - 1}{2 + \sqrt{3}} + \frac{1}{2 - \sqrt{3}} \Rightarrow \frac{\sqrt{2} - 1}{2 + \sqrt{3}} \times \frac{2 - \sqrt{3}}{2 - \sqrt{3}} = \frac{12\sqrt{2} - 4 - 9 + \sqrt{3}}{12} = \sqrt{2} - 1$$

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

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

$$r^{\frac{w}{r}} \times \frac{r \times r^{\frac{1}{r}}}{r} \times r^{\frac{1}{r}} = r \times r^{\frac{1}{r}} = 1r$$

صفحة
الف آخر (٢)

$$\frac{r^9 (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)}{r^{9-2} (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)} = 9r$$

(٥)

$$r^9 = r^9 \times \frac{1}{r} \times 9 \rightarrow \left(\frac{r}{r}\right)^9 = \frac{9}{r} \quad 9r = 2$$

$$((a-b)^r)^r \times ((a+b)^r)^r = (a^r + b^r - 2a^{\frac{r}{2}}b^{\frac{r}{2}})^r = (\sqrt{r} - \sqrt{1})^r$$

(٦)

$$= 3r - 19\sqrt{r} = 19(r - \sqrt{r}) = t(r - \sqrt{r}) \Rightarrow t = 19$$

$$\left(\underbrace{a + \frac{1}{a}}_A + \underbrace{\sqrt{r}}_B\right)^r \left(\underbrace{a + \frac{1}{a}}_A - \underbrace{\sqrt{r}}_B\right)^r = \left(a^r + \frac{1}{a^r} + r - r\right)^r = a^r + \frac{1}{a^r} + r$$

(٧)

$$\left(\sqrt[r]{r - r\sqrt{r}}\right)^r + \frac{1}{\left(\sqrt[r]{r - r\sqrt{r}}\right)^r} + r = r - r\sqrt{r} + \frac{1}{r - r\sqrt{r}} + r = \frac{r^9 + r^9 - 29\sqrt{r} + r}{r - r\sqrt{r}}$$

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

$$A = r^{\frac{10}{12}} \times r^{\frac{1}{12}} = r^1 = r \quad (r \times r)^{-\frac{1}{12}} = \frac{1}{r} \quad (1)$$

9) $\sqrt{a} = r \sqrt{a}^{\frac{10}{12}} \quad r \sqrt{a} = \frac{\sqrt{a}}{\sqrt{a}^{\frac{10}{12}}} = a^{-\frac{1}{12}} \quad a^{\frac{1}{12}} = \frac{1}{r \sqrt{a}} \quad a = (r \sqrt{a})^{-12}$

$$\frac{r \sqrt{r} - r}{\sqrt{r} + 1} = \frac{r(\sqrt{r} - 1)}{\sqrt{r} + 1} = \frac{\frac{\sqrt{a}^{\frac{10}{12}}}{\sqrt{a}^{\frac{10}{12}}} (\sqrt{r} - 1)^{\frac{1}{12}}}{(\sqrt{r} - 1)(\sqrt{r} + 1)} = \frac{r(r - r\sqrt{r} + 1)}{r} = \frac{1 - r\sqrt{r}}{r} = \frac{1}{r} - \sqrt{r}$$

10) $\underbrace{(\sqrt{x+a} - \sqrt{x-r})}_r (\sqrt{x+a} + \sqrt{x-r}) = x+a - x+r = a+r$

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

$$\frac{a+r-r}{r} = \frac{a}{r}$$

ك) الف) $(\sqrt{1+\sqrt{r}} + \sqrt{\sqrt{r}-1})^4 = 1 + \sqrt{r} + \sqrt{r} - 1 + 4(\sqrt{r}) = 4\sqrt{r} + 2\sqrt{r}$

$$\frac{\sqrt{4\sqrt{r}+2\sqrt{r}}}{\sqrt{\sqrt{r}-\sqrt{r}}} \times \sqrt{\frac{4(\sqrt{r}+\sqrt{r})^4}{1}} = \sqrt{4(r+r+4\sqrt{r})} = \sqrt{10+4\sqrt{r}}$$

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