

در این مسئله هم فرض 3

$$(1! + 2! + 3! + \dots + 25!) (2! + 4! + 6! + \dots + 46!) \quad (1)$$

از این 25 جمله 25 تا 25 = 25
از این 23 جمله 23 تا 23 = 23

$$1! = 1 \quad 2! = 2 \times 1 = 2 \quad 3! = 3 \times 2 \times 1 = 6 \quad 4! = 4 \times 3 \times 2 \times 1 = 24$$

$$9 \times 2 = 18 \rightarrow 18$$

(2)

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

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

(3)

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

$$\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10+2}} \times \frac{\sqrt{10-2}}{\sqrt{10-2}} = \frac{\sqrt{2}}{2} \rightarrow (\sqrt{3-\sqrt{5}} - \sqrt{3+\sqrt{5}}) \times \frac{\sqrt{2}}{2}$$

$$\sqrt{4-2\sqrt{5}} - \sqrt{4+2\sqrt{5}}$$

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

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2.)

(10)

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

$$\frac{\sqrt{1} + \sqrt{2}}{2 - \sqrt{2}} \times \frac{2 + \sqrt{2}}{2 + \sqrt{2}} = \frac{19(\sqrt{2} + \sqrt{2})}{19} = \boxed{\sqrt{2} + \sqrt{2}}$$

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

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

$$\Rightarrow \sqrt{2} + \sqrt{2} - \sqrt{2} - 1 = \boxed{\sqrt{2} - 1}$$

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

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

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

$$\Rightarrow \boxed{1 + \sqrt{2}}$$

ک به دوای ۲

(2)

$$(1) (\sqrt{1+\sqrt{4}} + \sqrt{\sqrt{4}-1}) (\sqrt{1+\sqrt{4}} + \sqrt{\sqrt{4}-1})$$

$$= \sqrt{\frac{2(\sqrt{4}+1)}{\sqrt{4}-1}} \times \sqrt{\frac{\sqrt{4}-1}{\sqrt{4}+1}} = \sqrt{\frac{10+5\sqrt{4}}{1}} \rightarrow \sqrt{(\sqrt{4}+2)^2} = |\sqrt{4}+2|$$

$$|\sqrt{4}+2| - 2 = \sqrt{4}$$

$$\rightarrow \sqrt[3]{\sqrt{2}^8} \times \sqrt[3]{16^2} \times \sqrt[3]{8\sqrt{2}} = \sqrt[3]{2^{\frac{8}{3}} \times 2^{\frac{16}{3}} \times 2^{\frac{3}{3}} \times 2^{\frac{1}{3}}} = \sqrt[3]{2^{\frac{27}{3}}} = 2$$

(4)

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

$$\frac{r^n}{r^m} \times \frac{1}{9} = 1 \quad \frac{r^n}{r^m} = 9 \quad n=2$$

$$(\sqrt{\sqrt{9}-1} - \sqrt{\sqrt{9}+1})^2 (\sqrt{\sqrt{9}-1} + \sqrt{\sqrt{9}+1})^2$$

(6)

$$\text{مورد } ((\sqrt{\sqrt{9}-1} - \sqrt{\sqrt{9}+1})^2)^2 \rightarrow (\sqrt{9-1} + \sqrt{9+1} - 2\sqrt{1})^2 = 2+1$$

$$\rightarrow \frac{12(2-\sqrt{4})}{2-\sqrt{4}} = 12$$

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تعطیل به مناسبت عید سعید فطر - روز جمهوری اسلامی ایران (تعطیل)

$$a = \sqrt{(r - \sqrt{r})^2} \Rightarrow a = \sqrt{r - \sqrt{r}} \rightarrow (a + \frac{1}{a} + \sqrt{r})^2 \quad (1)$$

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

مربع

$$\Rightarrow \left((a + \frac{1}{a})^2 - (\sqrt{r})^2 \right)^2 \rightarrow (r - \sqrt{r} + \frac{1}{r - \sqrt{r}})^2 = \epsilon^2 = r^2$$

$$r - \sqrt{r} + \frac{1}{r - \sqrt{r}} + \cancel{r - r} = \frac{r^2 - r\sqrt{r} + 1}{r - \sqrt{r}} = \epsilon^2$$

$$\frac{r^2 - r\sqrt{r} + 1}{r - \sqrt{r}} = \epsilon^2 \quad \epsilon^2 = r^2$$

$$A = \sqrt{\epsilon^2 \sqrt{r} \epsilon} \quad (1)$$

$$\sqrt{r^2 \epsilon} \times r^{\frac{\epsilon}{r}} = r^{\frac{10}{10}} + \frac{\epsilon}{r} = r^{\frac{10}{10}} = r = \epsilon$$

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

$$\frac{1}{a} - r = \frac{9}{\sqrt{r}} - r = 9 - \frac{r\sqrt{r}}{\sqrt{r}} = 9 - r\sqrt{r}$$

$$\frac{r\sqrt{r} - r}{\sqrt{r} + 1} \times \frac{\sqrt{r} - 1}{\sqrt{r} - 1} = 9 - r\sqrt{r}$$

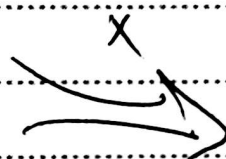
$$\frac{r\sqrt{r} - r}{r - 1} = 9 - r\sqrt{r}$$

$$a = \frac{1}{r\sqrt{r}} = \frac{\sqrt{r}}{r}$$

(10)

$$\sqrt{n+a} - \sqrt{n-\varepsilon} = r$$

$$\sqrt{n+a} + \sqrt{n-\varepsilon} = A+r$$



$$(n+a) - (n-\varepsilon) = rA + \varepsilon$$

$$a + \varepsilon = rA + \varepsilon$$

$$A = \frac{a}{r}$$