

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

سوال ۱)

از این قسمت یکان مندرج شده

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$$7 \times 2 = 14 \quad \text{یکان برانزد دهم} \rightarrow 2 + 4 = 6 \rightarrow \text{یکان برانزد اول} \rightarrow 1 + 6 = 7$$

$$\sqrt[4]{(1+\sqrt{5})^2} \cdot \sqrt[4]{(2+\sqrt{5})^{-1}} = \sqrt[4]{(1+\sqrt{5})^2 (2+\sqrt{5})^{-1}} = \sqrt[4]{\frac{1+2\sqrt{5}}{2+\sqrt{5}}} = \sqrt[4]{2} \quad \text{سوال ۲)}$$

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

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

$$\frac{2\sqrt{2}+3\sqrt{3}}{5-\sqrt{6}} - 2(\sqrt{3}-1)^{-1} = \frac{2\sqrt{2}+3\sqrt{3}}{2+3-\sqrt{2}\times\sqrt{3}} \times \frac{\sqrt{2}+\sqrt{3}}{\sqrt{2}+\sqrt{3}} - \frac{2}{\sqrt{3}-1} = \quad \text{سوال ۳)}$$

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

$$\frac{3\sqrt{3}-1}{1+(\sqrt{3})^2+1\times\sqrt{3}} \times \frac{\sqrt{3}-1}{\sqrt{3}-1} = \frac{(3\sqrt{3}-1)(\sqrt{3}-1)}{(\sqrt{3})^2-1^2} = \sqrt{3}-1 \quad \text{سوال ۴)}$$

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

$$\frac{(\sqrt{1+\sqrt{3}}+\sqrt{3}-1)}{\sqrt{3}-\sqrt{2}} \times \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} - 2 = (\sqrt{1+\sqrt{3}}+\sqrt{3}-1)(\sqrt{3}+\sqrt{2}) - 2 \quad \text{سوال ۵)}$$

$$= \sqrt{(1+\sqrt{3}+\sqrt{3}-1)^2 (\sqrt{3}+\sqrt{2})^2} - 2 = \sqrt{(\sqrt{3}+1+\sqrt{3}-1+2(\sqrt{3}-1))(\sqrt{3}+\sqrt{2})} - 2 = \sqrt{2(\sqrt{3}+\sqrt{2})^2} - 2 = (\sqrt{3}+\sqrt{2})\sqrt{2} - 2 = \sqrt{6} + 2 - 2 = \sqrt{6}$$

$$\sqrt[4]{2^4} \times \sqrt[4]{2^4 \times 2} \times \sqrt[4]{(2^4)^2 \times 2} = 2 \times 2 \times \sqrt[4]{2^4 \times 2^4 \times 2^4 \times 2} = 4 \times 2 = 12$$

$$\frac{r^x (1 + r^x + r^{2x} + r^{3x} + r^{4x})}{r^x (r^{-x} + r^{-2x} + 1 + r^{2x} + r^{4x})} = d^x \rightarrow \frac{r^x \times 1 \left(\frac{r^5 - 1}{r - 1} \right)}{r^x \times r^{-x} \left(\frac{r^5 - 1}{r - 1} \right)} = \left(\frac{r}{r} \right)^x \times \frac{r^4 r}{1d / r d} = d^x \quad (d \text{ دال})$$

$$\left(\frac{r}{r} \right)^x = r / r d = (1/d)^r \rightarrow x = r \quad \textcircled{r} \checkmark$$

$$((a-b)^r)^r ((a+b)^r)^r = [(a-b)(a+b)]^r = (a^r - b^r)^r \quad (6 \text{ دال})$$

$$(\sqrt{5r-2} - \sqrt{5r+2})^r = (\sqrt{5r-2} + \sqrt{5r+2} - 2\sqrt{4-r})^r = (2\sqrt{4-r} - 2\sqrt{4-r})^r = r^r (\sqrt{4-r} - \sqrt{4-r})^r =$$

$$r^r (4 + r - 2\sqrt{4-r}) = r^r (1 - 4\sqrt{4-r}) = 14(r - \sqrt{4-r}) \rightarrow t = 14/$$

\textcircled{r} \checkmark

$$\left[\left(a + \frac{1}{a} + \sqrt{r} \right) \left(a + \frac{1}{a} - \sqrt{r} \right) \right]^r = \left[\left(a + \frac{1}{a} \right)^r - (\sqrt{r})^r \right]^r = \left(a^r + \frac{1}{a^r} + r - r \right)^r = \quad (v \text{ دال})$$

$$a = \sqrt{(r - \sqrt{r})^r} = \sqrt{r - \sqrt{r}}$$

$$\left(a^r + \frac{1}{a^r} \right)^r$$

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

$$r^t = r^r \rightarrow \boxed{t = r}$$

\textcircled{r} \checkmark

$$\sqrt[10]{r^x \times 14} \times r^{\frac{x}{10}} = \sqrt[10]{r^x \times r^x} \times r^{\frac{x}{10}} = r^{\frac{x}{10}} \times r^{\frac{x}{10}} = r^{\frac{2x}{10}} = r^{\frac{x}{5}} = r^{\frac{x}{5}} \quad (1 \text{ دال})$$

$$(YA)^{-\frac{1}{r}} = (Y \times A)^{-\frac{1}{r}} = \sqrt[r]{\frac{1}{\lambda}} = \frac{1}{r} \quad \textcircled{r} \checkmark$$

$$\sqrt{a} = rV \times \sqrt[10]{a^{10}} \rightarrow rV \times a^r \times \sqrt{a} \Rightarrow a^r = \frac{1}{rV} \Rightarrow a = \pm \frac{1}{\sqrt{rV}} \quad (9 \text{ دال})$$

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

$$= r(r - 2\sqrt{r}) = 4 - 4\sqrt{r} \quad \textcircled{r} \checkmark$$

Date :/...../.....



$$\underbrace{(\sqrt{x+a} - \sqrt{x-c})}_r (\sqrt{x+a} + \sqrt{x-c}) = x+a - x+c = a+c \quad (10 \text{ Marks})$$

$$\sqrt{x+a} + \sqrt{x-c} - r = \frac{a+c}{r} - r = \frac{a}{r} \quad \text{✓}$$