الناسپانی   تکلیف ۲۱   دهم ریاضی B

۱۹,۷۵ آفرین

① $(1! + 3! + 5! + \dots + 25!)(2! + 4! + 6! + \dots + 24!) = \dots$

$1 + 6 = 7$ ، صفر ؛ $2 + 4 = 6$ ، صفر

$6 \times 7 = 42 \Rightarrow 2$ ✓

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② ۱,۷۵

الف) $\sqrt[4]{(4+\sqrt{7})^{-1}}\sqrt{1+\sqrt{7}}$

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

ب) $\left(\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}+2}\right)\left(\sqrt{3-\sqrt{5}} - \sqrt{3+\sqrt{5}}\right) \rightarrow \frac{1}{\sqrt{2}}\left(\sqrt{3-\sqrt{5}} - \sqrt{3+\sqrt{5}}\right)^2$ منفی

$\sqrt{2}(\sqrt{5}+\sqrt{2})$

$\sqrt{\frac{1}{2}(3-\sqrt{5}+3+\sqrt{5}-4)} = \sqrt{1} = 1$ ~~1~~ -1

③

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

$\Rightarrow \sqrt{2}+\sqrt{3} - \left(\frac{1}{\sqrt{3}-1}\right) \times \frac{\sqrt{3}+1}{\sqrt{3}+1} \rightarrow \sqrt{2}+\sqrt{3}-\sqrt{3}-1 = \sqrt{2}-1$ ✓

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ب) $\frac{\sqrt{27}-1}{4+\sqrt{3}} + (2-\sqrt{3})^{-1} \rightarrow \frac{3\sqrt{3}-1}{4+\sqrt{3}} \times \frac{4-\sqrt{3}}{4-\sqrt{3}} =$

$\frac{13(12\sqrt{3}+\sqrt{3}-4-9)}{13} = \sqrt{3}-1 + \left(\frac{1}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}}\right) = 1+2\sqrt{3}$ ✓

④ ۲

الف) $\frac{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}{\sqrt{\sqrt{3}-\sqrt{2}}} - 2$

A

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

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

$A = \sqrt{2(\sqrt{3}+\sqrt{2})^2} \rightarrow \sqrt{2}(\sqrt{3}+\sqrt{2})$ ✓

$\sqrt{6}+2$

$\sqrt{6}+2-2 = \sqrt{6}$ ✓

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(۸)

$$A = \sqrt[3]{4^3\sqrt{16}} \times \left(\frac{1}{4}\right)^{\frac{-6}{2}}$$

$$\sqrt[15]{2^9 \times 2^6} \quad \frac{\div 3}{\div 3} \rightarrow \sqrt[15]{2^{30}} = 2^2 = 4$$

$$\sqrt[15]{2^{30}}$$

$$\left(\frac{1}{8}\right)^{-\frac{1}{3}} \rightarrow \left(\frac{1}{8}\right)^{\frac{1}{3}} \rightarrow \sqrt[3]{\frac{1}{8}} = \frac{1}{2}$$

(۹)

$$\sqrt[7]{a} = 27 \times \sqrt[7]{a^{15}}$$

$$\frac{\sqrt[7]{a}}{\sqrt[7]{a^{15}}} = 27 \rightarrow \sqrt[7]{\frac{a^1}{a^{15}}} = \sqrt[7]{a^{-14}} = 2^7$$

$$a^{-2} = 27$$

$$\frac{3\sqrt{3} - 3}{1 + \sqrt{3}} \times \frac{1 - \sqrt{3}}{1 - \sqrt{3}} = 3\sqrt{3} - 4 \qquad \frac{1}{a^2} = 27 \rightarrow \frac{1}{a} = 3\sqrt{3}$$

$$\sqrt{x+a} + \sqrt{x-4} \quad -2 \qquad \sqrt{x+a} - \sqrt{x-4} = 2$$

(۱۰)

$$\times \rightarrow \frac{\left(\sqrt{x+a} - \sqrt{x-4}\right)\left(\sqrt{x+a} + \sqrt{x-4}\right)}{2} = \frac{x+a-(x-4)}{2} = \frac{a+4}{2} - 2$$

$$\frac{a+4-4}{2} = \frac{9}{2}$$

۲ـب

$$\frac{\sqrt{۲}+\sqrt{۵}}{\sqrt{۱۰}+۲} = \frac{\sqrt{۲}+\sqrt{۵}}{\sqrt{۲}(\sqrt{۵}+\sqrt{۲})} = \frac{۱}{\sqrt{۲}}$$

$$\underbrace{\left(\sqrt{۳-\sqrt{۵}} - \sqrt{۳+\sqrt{۵}}\right)}_{b}{}^{۲} = ۳-\sqrt{۵} + ۳+\sqrt{۵} - ۲\sqrt{۹-۵} = ۶-۴ = ۲$$

$$\rightarrow b^{۲} = ۲ \xrightarrow{b<۰} b = -\sqrt{۲} \rightarrow \frac{۱}{\sqrt{۲}} \times (-\sqrt{۲}) = -۱$$