

۱۹, ۵

تکلیف ۲۱

آیدین اشرفی - دهم بر A

$$\underbrace{(1! + 3! + 5! + \dots + 25!)}_7 \underbrace{(2! + 4! + 6! + \dots + 24!)}_6$$

$$7 \times 6 = 42$$

کین ها : ۲ ✓

الف) $\sqrt[4]{\left(\frac{7}{7} + \sqrt{\frac{1}{7}}\right)^{-2}} = \sqrt[4]{\left(\frac{\sqrt{7}+1}{\sqrt{7}}\right)^{-2}} = \sqrt[4]{2} \checkmark$

ب) $\frac{(\sqrt{2} + \sqrt{5})^{\sqrt{10}-2}}{(\sqrt{10} + 2)^{\sqrt{10}-2}} = \frac{\sqrt{2}}{2}$ کوی کون I

$3 - \sqrt{5} = \left(\sqrt{\frac{5}{2}} - \sqrt{\frac{1}{2}}\right)^2$
 $3 + \sqrt{5} = \left(\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}}\right)^2$

$\sqrt{3 - \sqrt{5}} - \sqrt{3 + \sqrt{5}} = \left(\sqrt{\frac{5}{2}} - \sqrt{\frac{1}{2}}\right) - \left(\sqrt{\frac{5}{2}} + \sqrt{\frac{1}{2}}\right) = -\frac{2}{\sqrt{2}}$ II

لرزش: I و II را ریم: $\sqrt{\frac{2}{2}} \times \frac{-2}{\sqrt{2}} = -1 \checkmark$

الف) $\frac{\sqrt{8} + \sqrt{27}}{9 - \sqrt{6}} = \frac{(2\sqrt{2} + 3\sqrt{3})(5 + \sqrt{6})}{19} = \frac{10\sqrt{2} + 4\sqrt{3} + 15\sqrt{2} + 9\sqrt{3}}{19}$

کوی کون $\frac{2}{\sqrt{2}-1} \times \frac{\sqrt{2}+1}{\sqrt{2}+1} = \sqrt{2}+1 \Rightarrow \sqrt{2}-1$ 2

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

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

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

بستون ۲

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

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

حل این معادله خیل سخته! صفحه اضرا راه ساده تر نوشتیم

$$\text{---)} \quad r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} \times r^{\frac{1}{r}} = 1 \quad \checkmark$$

-K
A

$$\frac{r^x (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)}{r^{x-2} (1 + r + r^2 + r^3 + r^4 + r^5 + r^6)} = \left(\frac{r}{r}\right)^x \times \frac{r^4 \times r^6}{r^2} = 0 \quad \checkmark$$

-D
(r)

$$\left(\frac{r}{r}\right)^x = \frac{r}{r} \Rightarrow \boxed{x=2} \quad \checkmark$$

$$(a-b)^r (a+b)^r = [(a-b)(a+b)]^r = (a^r + b^r) - \epsilon a^r b^r$$

E

$$(a^r - b^r)^r \Rightarrow \left[\left(\sqrt{\sqrt{4}-r} - \sqrt{\sqrt{4}+r} \right)^r \right]^r$$

(r)

$$= (r\sqrt{4} - r\sqrt{r})^r = [r\sqrt{r}(\sqrt{r}-1)]^r = r^r - 14\sqrt{r}$$

$$14(r - \sqrt{r}) = t(r - \sqrt{r})$$

$$\boxed{t=14} \quad \checkmark$$

$$A = \sqrt[r]{\frac{r}{\omega}} \times \sqrt[r]{\frac{r}{\omega}} \times \sqrt[r]{\frac{r}{\omega}} = \sqrt[r]{r} \quad \checkmark$$

$$A = \sqrt[r]{r} \Rightarrow (\sqrt[r]{r} A)^{-\frac{1}{r}} = \frac{1}{(\sqrt[r]{r} A)^{\frac{1}{r}}} = \frac{1}{\sqrt[r]{r A}} = \frac{1}{\sqrt[r]{r} \sqrt[r]{A}} = \frac{1}{\sqrt[r]{r}} \quad \checkmark$$

$$a^{\frac{1}{\sqrt{r}}} = \sqrt[r]{r} a^{\frac{1}{\sqrt{r}}}$$

$$\sqrt[r]{r} a^{\sqrt{r}} = 1$$

$$a^{\sqrt{r}} = \frac{1}{\sqrt[r]{r}}$$

$$a = \frac{1}{\sqrt[r]{r}} \times \frac{\sqrt{r}}{\sqrt{r}} = \frac{\sqrt{r}}{r}$$

$$a = \frac{\sqrt{r}}{r} \quad \checkmark$$

$$\frac{\frac{1}{a} - r}{\sqrt{r} + 1} = \frac{\frac{r}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r}} - r}{1 - \sqrt{r}} = \frac{r(\sqrt{r} + 1 - r\sqrt{r})}{\sqrt{r} + 1} \times \frac{\sqrt{r} - 1}{\sqrt{r} - 1} = 4 - 2\sqrt{r} \quad \checkmark$$

دقتاً!

$$\underbrace{(\sqrt{x+a} - \sqrt{x-r})}_r (\sqrt{x+a} + \sqrt{x-r}) \Rightarrow \text{در مخرج ضرب کنیم}$$

$$x+a - (x-r) = r+a$$

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

$$(x - \sqrt{c})^2 = x^2 + c - 2x\sqrt{c} = x - 2x\sqrt{c}$$

$$a = \sqrt{(x - \sqrt{c})^2} = \sqrt{x - \sqrt{c}}$$

$$= \left(a + \frac{1}{a} + \sqrt{c}\right)^2 \left(a + \frac{1}{a} - \sqrt{c}\right)^2$$

$$= \left[\left(a + \frac{1}{a} + \sqrt{c}\right) \left(a + \frac{1}{a} - \sqrt{c}\right) \right]^2$$

$$= \left[\left(a + \frac{1}{a}\right)^2 - c \right]^2$$

$$= \left[\left(\sqrt{x - \sqrt{c}} + \frac{1}{\sqrt{x - \sqrt{c}}} \right)^2 - c \right]^2$$

$$= \left[\left(x - \sqrt{c} + \frac{1}{x - \sqrt{c}} + c \right) - c \right]^2$$

$$= \left(\frac{x^2 + 1 - x\sqrt{c} + 1}{x - \sqrt{c}} + c - c \right)^2 = (x + 1 - x) = 19$$

$$x^2 = 19 \Rightarrow \boxed{x = 4} \quad \checkmark$$

(v)

(2)

الف)

$$\overbrace{\frac{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}{\sqrt{\sqrt{3}-\sqrt{2}}}}^A - 2 = \frac{\sqrt{2}(\sqrt{\sqrt{3}+\sqrt{2}})}{\sqrt{\sqrt{3}-\sqrt{2}}} - 2 = \sqrt{2} \left(\sqrt{\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}} \right) - 2 =$$

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

$$\sqrt{2} \sqrt{(\sqrt{\sqrt{3}+\sqrt{2}})^2} = \sqrt{4} + 2 - 2 = \boxed{\sqrt{4}}$$

تأكد!