

Subject :

Year :

Month :

Date :

۴- ابتدا عبارت را به قاعده دوین رسانیم و سپس جذر می گیریم

$$\left(\frac{\sqrt{1+\sqrt{3}} + \sqrt{3-\sqrt{3}}}{\sqrt{3}-\sqrt{3}} \right)^2 \rightarrow \frac{1+\sqrt{3}+\sqrt{3}-1+2\sqrt{3}}{\sqrt{3}-\sqrt{3}} \quad \text{یا} \quad \frac{2\sqrt{3}+2\sqrt{3}}{\sqrt{3}-\sqrt{3}} \times \frac{\sqrt{3}+\sqrt{3}}{\sqrt{3}+\sqrt{3}} =$$

$$\frac{6+2\sqrt{3}+8\sqrt{3}+8}{1+8\sqrt{3}} \quad \text{یا} \quad \frac{14+10\sqrt{3}}{1+8\sqrt{3}} = \frac{2+6+8\sqrt{3}}{1+8\sqrt{3}} = (2+\sqrt{3})^2 \rightarrow \sqrt{(2+\sqrt{3})^2} =$$

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

$$\therefore \left(\sqrt{\frac{1}{2}} \right)^{\frac{1}{2}} \times \sqrt[4]{2} \times \sqrt[4]{2} \times \sqrt[4]{2} = 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times \left(2^{\frac{1}{4}} \right)^{\frac{1}{2}} \rightarrow 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{8}} =$$

$$2^{\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{8}} = 2^{\frac{11}{8}} = \boxed{11}$$

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

$$2^{4-2}(1+2+2^2+2^3+2^4+2^5)$$

$$2^4 \times 2^5 = 2^2 \times 2^4 \times 2^5 \rightarrow 2^4 \times 2^5 = 2^4 \times 11$$

$$2^4 = 2^4 \times \frac{2}{2} \rightarrow 2^4 = 2^{4-2} \times 2^2 \rightarrow 2^{4-2} = 2$$

$$\boxed{n=2}$$

$$((a-b)^2)^2 \times ((a+b)^2)^2 = t(2-\sqrt{3})$$

$$(a-b)^4 \times (a+b)^4 = t(2-\sqrt{3}) \rightarrow ((a-b)(a+b))^4 = t(2-\sqrt{3})$$

$$(a^2-b^2)^4 = t(2-\sqrt{3}) \rightarrow (\sqrt{3}-2 - \sqrt{3}+2)^4 = t(2-\sqrt{3})$$

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

$$2^4+16-2(8\sqrt{3}) = t(2-\sqrt{3}) \rightarrow 3^2-16\sqrt{3} = t(2-\sqrt{3})$$

$$\boxed{t=16}$$

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

$$a^r + \frac{1}{a^r} = r^{\frac{r}{r}}$$

-V

$$\sqrt{r - \varepsilon \sqrt{r}} + \frac{1}{(\sqrt{r - \varepsilon \sqrt{r}})^r} = r^{\frac{r}{r}} \rightarrow \sqrt{(r - \varepsilon \sqrt{r})}^r + \frac{1}{(\sqrt{r - \varepsilon \sqrt{r}})^r} = r^{\frac{r}{r}}$$

$$r - \varepsilon \sqrt{r} + \frac{1}{r - \varepsilon \sqrt{r}} = r^{\frac{r}{r}} \rightarrow \frac{r - \varepsilon \sqrt{r} + 1}{r - \varepsilon \sqrt{r}} = r^{\frac{r}{r}} \rightarrow \frac{r - \varepsilon \sqrt{r}}{r - \varepsilon \sqrt{r}} = r^{\frac{r}{r}} \rightarrow r = r^{\frac{r}{r}}$$

$$\frac{r}{r} = r^{\frac{r}{r}} \rightarrow \frac{r}{r} = r$$

$$A = \sqrt[r]{r^r \times r^{\frac{r}{r}}} \times (r^{-1})^{-\frac{r}{r}} \rightarrow \sqrt[r]{r^{\frac{r}{r}}} \times r^{\frac{r}{r}} \rightarrow r^{\frac{r}{r}} \times r^{\frac{r}{r}} = r^{\frac{r}{r}} = r$$

-A

$$(rA)^{-\frac{1}{r}} \rightarrow (r \times r^r)^{-\frac{1}{r}} = (r^r)^{-\frac{1}{r}} = r^{-1} = \left(\frac{1}{r} \right)$$

$$\sqrt[r]{a} = \sqrt[r]{r \times a^{\frac{1}{r}}} \xrightarrow{\sqrt[r]{r \times a^{\frac{1}{r}}}} a = r^{\frac{r}{r}} \times a^{\frac{1}{r}} \rightarrow a = r^{\frac{r}{r}} \times a^{\frac{1}{r}} \rightarrow a^{\frac{1}{r}} = r^{-\frac{r}{r}}$$

$$a^{\frac{1}{r}} = \frac{1}{r^r} \rightarrow a = \pm \frac{1}{r^r \sqrt{r}} \xrightarrow{\text{نصفه اولى}} a = \frac{1}{r^r \sqrt{r}}$$

$$a^{\frac{1}{r}} = r^{-r}$$

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

$$= \frac{1 - 2\sqrt{r}}{r}$$

$$\sqrt{r+2} - \sqrt{r-2} = 2$$

$$\left(\sqrt{r+2} - \sqrt{r-2} \right) \left(\sqrt{r+2} + \sqrt{r-2} \right) = r+2 - (r-2) \Rightarrow a+2$$

$$\frac{a+2}{r} \Rightarrow \sqrt{r+2} + \sqrt{r-2}$$

$$\frac{a+2}{r} - 2 = \left(\frac{a}{r} \right)$$