

نام و نام خانوادگی (نام و نام خانوادگی) پاسخنامه تشریحی تکلیف شماره ۲۱... کلاس ... (هم در صورت)

$$1! \rightarrow 1 \quad 3! \rightarrow 6$$

از این به بعد هم صفر است
یعنی حاصل ۲ و ۵ دارد.

$$2! \rightarrow 2 \quad 4! \rightarrow 24$$

$$(1+6)(2+4) = 7 \times 6 = 42 \leftarrow \text{پایان}$$

$$\text{الف) } \rightarrow (4+\sqrt{5})^{-\frac{1}{2}} \times (1+\sqrt{5})^{\frac{1}{2}}$$

$$\left(\frac{(1+\sqrt{5})^2 (4+\sqrt{5})^{-1}}{(1+2\sqrt{5})(4+\sqrt{5})} \right)^{\frac{1}{2}} = \left(\frac{2(4+\sqrt{5})}{4+5\sqrt{5}} \right)^{\frac{1}{2}} = \left(\frac{2}{5\sqrt{5}} \right)^{\frac{1}{2}}$$

$$\text{ب) } \sqrt{10+5\sqrt{5}} \rightarrow \frac{\sqrt{5}+1}{\sqrt{2}}$$

$$\sqrt{10-5\sqrt{5}} = \frac{\sqrt{5}-1}{\sqrt{2}}$$

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

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

$$\text{الف) } (59-1)^{-1} \rightarrow (53-1)^{-1} = \frac{1}{53-1}$$

$$\frac{2(53+1)}{53-1} = 53+1$$

$$\frac{252+252}{53-56} - (53+1) \rightarrow \frac{504-252+56-53}{53-56} = \frac{504-252+3}{-3} = \frac{255}{-3} = -85$$

$$\boxed{53-1} \leftarrow \text{در ۲ به جای ۵۳}$$

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

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

$$(53-1) + (2+\sqrt{3}) = 2\sqrt{3}+1$$

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

$$\text{ب) } 2^{\frac{1}{12}} \times 2^{\frac{1}{6}} \times 2^{\frac{1}{4}} \times 2^{\frac{1}{3}} = 2^{\frac{1}{12}+\frac{1}{6}+\frac{1}{4}+\frac{1}{3}} = 2^{\frac{1}{2}} = \sqrt{2}$$

$$(2^9) + (1+2^1+2^2+2^3+2^4+2^5)$$

$$(2^9) + (2^{-2}+2^{-1}+2^0+2^1+2^2+2^3)$$

$$\rightarrow \frac{2^4 \times 2^9}{2^3 \times 2^9 - 2} = 2^2$$

$$\frac{9}{20\pi} \times \frac{20\pi}{9} \times \frac{2^4 \times 2^9}{2^3 \times 2^9} \times \left(\frac{2}{2}\right)^9 = 2^2 \times \frac{9}{20\pi}$$

$$\left(\frac{2}{2}\right)^9 = \frac{9}{2} \times \left(\frac{2}{2}\right)^2 \quad \boxed{2=2}$$

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

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

$$t = \frac{-r}{r-\sqrt{r}}$$

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

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

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

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

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

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

$$A = r^{\frac{r}{2 \times 10}} \times r^{\frac{r}{10}} \times r^{\frac{r}{2 \times 10}} = r^{\frac{r+r+r}{10}} = r^{\frac{3r}{10}} = \boxed{r}$$

$$(r \times r)^{-\frac{1}{r}} = r^{-\frac{1}{r}} = \left(\frac{1}{r}\right)^{\frac{1}{r}} = \boxed{\sqrt[r]{\frac{1}{r}}}$$

1

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

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

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

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

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

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

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

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

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