

هلیا عرب

از ۵۱ به ۱۱۱
 $2 + 2^2 = 12$
 $1 + (3 \times 2) = 7$
 $6 \times 7 = 42$

سوال ۲) $\sqrt[4]{(4+\sqrt{7})^{-1}} \times \sqrt{1+\sqrt{7}} \Rightarrow \sqrt[4]{\frac{1}{4+\sqrt{7}}} \sqrt{4-\sqrt{7}} = \sqrt[4]{2}$
 $\sqrt[4]{(1+\sqrt{7})^2} = \sqrt[4]{8+2\sqrt{7}}$

ب) $\left(\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}-12} \right) (\sqrt{2}\sqrt{5} - \sqrt{3+\sqrt{5}}) (\sqrt{2}\sqrt{5} - \sqrt{3+\sqrt{5}})^2 = 2 - \sqrt{5} + \sqrt{5} - 4$
 $\frac{\sqrt{2}+\sqrt{5}}{\sqrt{10}-12} \times \frac{(\sqrt{10}-12)}{6} = \frac{\sqrt{50}-12\sqrt{2}+5\sqrt{2}-12\sqrt{5}}{6} = \frac{5\sqrt{2}}{6}$
 $\frac{\sqrt{2}}{2}$
 $\frac{\sqrt{2}}{2} \times \sqrt{2} = 1$

سوال ۳) $\frac{\sqrt{8} + \sqrt{2}\sqrt{5} \times (5+\sqrt{6}) (\sqrt[4]{9}-1)^{-1}}{5-\sqrt{4}} \times (5+\sqrt{4})$
 $\frac{1 \cdot \sqrt{2} + 10\sqrt{5} + 4\sqrt{2} + 9\sqrt{2}}{19} = \frac{19\sqrt{2} + 10\sqrt{5}}{19} = \sqrt{2} + \sqrt{5}$
 $\frac{\sqrt{2}-1 \times (5-\sqrt{5})}{5+\sqrt{5} \times (5-\sqrt{5})} + (2-\sqrt{5})^{-1}$
 $\frac{5\sqrt{2}-5-5\sqrt{5}+5\sqrt{10}}{25-5} = \frac{5\sqrt{2}-5-5\sqrt{5}+5\sqrt{10}}{20} = \frac{\sqrt{2}-1}{4} + \frac{1}{2-\sqrt{5}}$
 $\sqrt{2}-1 + 2 + \sqrt{5} = 2\sqrt{5} + 1$

سوال ۴) $\frac{\sqrt{1+\sqrt{5}} + \sqrt{\sqrt{5}-1}}{\sqrt{\sqrt{2}-\sqrt{2}}} - 2 \Rightarrow \frac{(\sqrt{1+\sqrt{5}} + \sqrt{\sqrt{5}-1})^2}{\sqrt{\sqrt{5}-\sqrt{5}}} = \frac{1+\sqrt{5}+\sqrt{5}-1+2\sqrt{2} \times (\sqrt{2}+\sqrt{2})}{\sqrt{5}-\sqrt{5} \times (\sqrt{2}+\sqrt{2})}$
 $\frac{2\sqrt{2}+\sqrt{2}}{1} \times (\sqrt{2}+\sqrt{2}) \Rightarrow \frac{2(\sqrt{2}+\sqrt{2})}{1} = \sqrt{2} \cdot (\sqrt{2}+\sqrt{2})$
 $\sqrt{2} + \sqrt{2} - 2 = \sqrt{2}$

ب) $\sqrt[4]{\sqrt[4]{2}} \times \sqrt[4]{162} \times \sqrt[4]{4\sqrt{2}}$
 $2^{\frac{1}{16}} \times 3^{\frac{1}{4}} \times 2^{\frac{1}{8}} = 2^{\frac{1}{16} + \frac{1}{8}} \times 3^{\frac{1}{4}} = 2^{\frac{3}{16}} \times 3^{\frac{1}{4}} = 12$

سوال ۵) $\frac{3^{n+1} + 3^{n+2} + 3^{n+3} + 3^{n+4} + 3^{n+5}}{3^{n-2} + 3^{n-1} + 3^n + 3^{n+1} + 3^{n+2}} = 52 \Rightarrow 3^n (1+3+9+27+81) = 52 \times 3^n (1+3+9+27+81)$
 $3^n \times 121 = 52 \times 3^n \times 121$
 $3^n = 52 \times 3^n \times 9$
 $3^n = 3^{n-2} \times 9$
 $3^n = 3^{n-2} \times 3^2$
 $3^n = 3^n$
 $n=2$

$$(a^2 + b^2 - 2ab)^2 (a^2 + b^2 + 2ab)^2 + (1 - \sqrt{5})$$

سوال ٩٢

$$((a^2 + b^2)^2 - (2ab)^2)^2$$

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

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

$$t = 16$$

$$2\sqrt{5} + 1 - 16\sqrt{2} = t(1 - \sqrt{5})$$

$$32 - 16(1 - \sqrt{5}) = t(1 - \sqrt{5})$$

$$(a + \frac{1}{a} + \sqrt{2})^2 (a + \frac{1}{a} - \sqrt{2})^2 = 2^t$$

سوال ٧

$$((a + \frac{1}{a})^2 - (\sqrt{2})^2)^2$$

$$\sqrt{1-5\sqrt{2}} + \sqrt{1-\sqrt{2}} \rightarrow 1 - \sqrt{2} + \frac{1 \times (1-\sqrt{2})}{1-\sqrt{2} \times 1+\sqrt{2}} + 1 = 1 - \sqrt{2} + 1 + \sqrt{2} + 1 = 3 - 2\sqrt{2}$$

$$2^t = 2^{\frac{1}{2}} \times 2^{\frac{1}{2}} \times 2^{\frac{1}{2}} \times 2^{\frac{1}{2}} = 2^2$$

$$A = \sqrt[10]{\sqrt[10]{16} \left(\frac{1}{r}\right)^{\frac{5}{10}}}$$

سوال ٨١

$$10 \sqrt[10]{\frac{1}{r}} \rightarrow r^{\frac{1}{10} \times \frac{1}{10}} \times r^{\frac{5}{10}} = r^{\frac{6}{10}} = r^{\frac{3}{5}} = \frac{1}{r^{\frac{2}{5}}}$$

$$(r^{\frac{3}{5}})^{-\frac{1}{5}} = \sqrt[5]{\frac{1}{r^{\frac{3}{5}}}} = \frac{1}{r^{\frac{3}{25}}}$$

$$\sqrt[10]{a} = 17 \times a^{\frac{10}{17}} \rightarrow 1 = 17 \cdot a^{\frac{1}{17}}$$

سوال ٩٠

$$\rightarrow a^{\frac{1}{17}} = \frac{1}{17}$$

$$a = \frac{1}{17^{17}} \quad \frac{1}{a} = 17^{17}$$

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

$$\frac{3\sqrt{2} - 4 + 4\sqrt{2}}{1 - 2 + 2\sqrt{2} - 1} = \frac{7\sqrt{2} - 4}{2\sqrt{2} - 2}$$

$$\sqrt{m+a} + \sqrt{m-a} = -2 \quad \sqrt{m+a} - \sqrt{m-a} = 2$$

سوال ١٠

$$A + B = -2$$

$$B + B = 0$$

$$2B = 0$$

$$2\left(\frac{a}{2}\right) = \frac{a}{1}$$

$$A - B = 2$$

$$(A+B+2)$$

$$A' = B' + 2 + 2B$$

$$a' + a = a + 2 + 2 + 2\sqrt{m-a}$$