

۱! = 1 (۷) (۲۶) = ۲۶ (۲) ۱

۳! = ۳ × ۲ × ۱ = ۶ ۲! = ۲ × ۱ ۴! = ۴ × ۳ × ۲ × ۱ = ۲۴

محاسبه حاصل ۲ × ۵ = ۱۰ (۲) ۱

$\sqrt{\frac{1}{4+5}} \times \sqrt{(1+5)^2} = \sqrt{\frac{(1+5)^2}{4+5}} = \sqrt{\frac{1+2\sqrt{5}+5}{4+5}} = \sqrt{\frac{6+2\sqrt{5}}{9}} = \sqrt{\frac{2(3+\sqrt{5})}{9}} = \frac{\sqrt{2(3+\sqrt{5})}}{3}$ (۲) ۱

$\frac{\sqrt{2+5}}{\sqrt{2(5+5)}} \sqrt{(\sqrt{3-5} - \sqrt{2+5})^2} = \frac{1}{\sqrt{2}} \times \sqrt{3-5+2+5-2(2)} = \frac{1}{\sqrt{2}} \times \sqrt{1} = \frac{1}{\sqrt{2}}$ (۲) ۱

$\frac{2\sqrt{2} + 3\sqrt{3}}{5-\sqrt{6}} - \frac{2}{\sqrt{9}-1} = \frac{2\sqrt{2} + 3\sqrt{3}}{5-\sqrt{6}} \times \frac{5+\sqrt{6}}{5+\sqrt{6}} = \frac{10\sqrt{2} + 15\sqrt{3} + 3\sqrt{12} + 3\sqrt{18}}{25-6} = \frac{10\sqrt{2} + 15\sqrt{3} + 6\sqrt{3} + 9\sqrt{2}}{19} = \frac{19\sqrt{2} + 21\sqrt{3}}{19} = \sqrt{2} + \frac{21\sqrt{3}}{19}$ (۲) ۳

$\frac{3\sqrt{3}-1}{4+\sqrt{2}} \times \frac{4-\sqrt{2}}{4-\sqrt{2}} = \frac{12\sqrt{3}-4\sqrt{2}-4\sqrt{2}+1}{16-2} = \frac{12\sqrt{3}-8\sqrt{2}-3}{14}$ (۲) ۳

$\frac{\sqrt{3}+a}{\sqrt{1+a} + \sqrt{a-1}} - 2 = \frac{\sqrt{3}+a}{\sqrt{1+a} + \sqrt{a-1}} \times \frac{\sqrt{1+a} - \sqrt{a-1}}{\sqrt{1+a} - \sqrt{a-1}} = \frac{(\sqrt{3}+a)(\sqrt{1+a} - \sqrt{a-1})}{1-a}$ (۲) ۴

$\frac{1}{\sqrt{2}} \times \frac{2+\sqrt{2}}{2+\sqrt{2}} = \frac{2+\sqrt{2}}{2+\sqrt{2}}$ (۲) ۴

$\frac{3^2(1+3+9+27+81+243)}{3^2(\frac{1}{3} + \frac{1}{9} + 1 + 3 + 9 + 27)} = 52$ (۲) ۵

$\frac{3^2(364)}{3^2(\frac{36}{3})} = 52$ (۲) ۵

$1/9 \times 2^2 = 3^2 \times 364 \Rightarrow (\frac{3}{2})^2 = \frac{119}{364} = 2,25 = (1,5)^2 \Rightarrow 2 = 2$ (۲) ۵

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

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

$$\in (1, 2) \checkmark$$

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

$$\sqrt{a-b} + 1 - 2\sqrt{a} = 1 - 2\sqrt{a}$$

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

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

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

$$A = \sqrt[10]{10} \times \sqrt[5]{5} = \sqrt[2]{5} \times \sqrt[5]{5} = \sqrt[10]{5^2} \times \sqrt[10]{5^2} = \sqrt[10]{5^4} = \sqrt[5]{5} = \sqrt[10]{5^2} \checkmark$$

$$(1)^{-\frac{1}{2}} = (2^{\frac{1}{2}})^{-\frac{1}{2}} = (2)^{-\frac{1}{4}} = \left(\frac{1}{2} \right)^{\frac{1}{4}} \checkmark$$

$$\sqrt[3]{a} = \sqrt[3]{a^{\frac{10}{3}}}$$

$$a^{\frac{1}{3}} = \sqrt[3]{a^{\frac{10}{3}}}$$

$$\frac{1}{\sqrt[3]{a}} = \frac{a^{\frac{10}{3}}}{a^{\frac{1}{3}}} = a^{\frac{9}{3}} = \frac{1}{a^{\frac{1}{3}}} = \frac{1}{\sqrt[3]{a}} = \frac{1}{\sqrt[3]{a}}$$

$$\frac{1}{a} - \sqrt{a} = \sqrt{a} - \sqrt{a}$$

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

$$\frac{12-6\sqrt{a}}{1+\sqrt{a}} = \frac{6(2-\sqrt{a})}{1+\sqrt{a}} \checkmark$$

$$(\sqrt{x+a} - \sqrt{x-a}) (\sqrt{x+a} + \sqrt{x-a}) = x(\sqrt{x+a} + \sqrt{x-a})$$

$$x+a - x+a = x(\sqrt{x+a} + \sqrt{x-a})$$

$$a+a$$

$$\frac{a}{x} + x - x = \left(\frac{a}{x} \right) \checkmark$$