

شماره تلفن : ۲۱

نام خانوادگی : کاظمی

$$(1! + 3! + 5! + \dots + 201!) (2! + 4! + 6! + \dots + 402!) \quad (1)$$

$$(1 + 9 + \dots + 0) (2 + 8 + \dots + 0) = 42$$

$$\sqrt[n]{n!} = n$$

$$الف) \sqrt[n]{(K + \sqrt{U})^{-1} \frac{1 + \sqrt{U}}{K + \sqrt{U}}} = \sqrt[n]{\frac{1 + \sqrt{U}}{K + \sqrt{U}}} = \sqrt[n]{2} \quad (2)$$

$$ب) \frac{(\sqrt{2} + \sqrt{5})}{\sqrt{2}(\sqrt{5} + \sqrt{2})} \cdot \frac{(\sqrt{3} - \sqrt{5} - \sqrt{3} + \sqrt{5})}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} =$$

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

$$الف) \frac{2\sqrt{2} + 3\sqrt{3}}{5 - \sqrt{4}} \cdot \frac{2}{\sqrt{3} - 1} = \frac{\sqrt{2} + \sqrt{2}}{\sqrt{3} - 1} = \sqrt{2} - 1 \quad (3)$$

$$ب) \frac{1\sqrt{2} + 4\sqrt{3} + 9\sqrt{4} + 16\sqrt{5} + 25\sqrt{6} + 36\sqrt{7} + 49\sqrt{8} + 64\sqrt{9}}{x} = \sqrt{3} + 1$$

$$ب) \frac{10\sqrt{3} - 1}{K + \sqrt{3}} + \frac{1}{2 - \sqrt{3}}$$

$$\frac{10\sqrt{3} - 9 - K + \sqrt{K}}{1} + \frac{2 + \sqrt{3}}{1} = \sqrt{3} - 1 + 2 + \sqrt{3} = 2\sqrt{3} + 1$$

$$الف) \frac{(\sqrt{1 + \sqrt{3}} + \sqrt{3} - 1) \times \sqrt{\sqrt{3} + 2}}{\sqrt{3} - \sqrt{2}} = (\sqrt{1 + \sqrt{3}} + \sqrt{3} - 1) \sqrt{\sqrt{2} + 2} (K)$$

$$\left((\sqrt{1 + \sqrt{3}} + \sqrt{3} - 1) (\sqrt{\sqrt{3} + 2}) \right)^2 = \sqrt{(2\sqrt{3} - 2\sqrt{2})(\sqrt{3} - \sqrt{2})} = \sqrt{(4 - 2)} = \sqrt{2} - 1$$

$$b) \sqrt[10]{x^x} \times \sqrt[10]{x^x} \times \sqrt[10]{x^x} \times \sqrt[10]{x^x} \times \sqrt[10]{x^x} = \sqrt[10]{x^x \times x^x \times x^x \times x^x \times x^x} = \sqrt[10]{x^{5x}} = \sqrt[2]{x^x} \quad (11)$$

$$\frac{10^x (1 + 10 + 100 + 1000 + 10000 + 100000)}{10^x \left(\frac{1}{10} + \frac{1}{100} + \frac{1}{1000} + \frac{1}{10000} + \frac{10}{100000} + \frac{100}{1000000} \right)} = 81 \quad (12)$$

$$\left(\frac{10}{1} \right)^x \cdot \frac{10^x}{10^x} = \frac{9}{10} \quad (x=1)$$

$$(a^x + b^x - kab)^x (a^x + b^x + kab)^x = ((a^x + b^x) - kab)^x ((a^x + b^x) + kab)^x$$

$$(a^x + b^x + kab - kab)^x (a^x + b^x - kab)^x$$

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

$$(2\sqrt[5]{4} - 2\sqrt[5]{2})^5 = [2\sqrt[5]{2}(\sqrt[5]{2}-1)]^5 = 16(2-\sqrt[5]{2}) = 2(2-\sqrt[5]{2})$$

$$L=14$$

$$\left(a + \frac{1}{a} + \sqrt{2} \right)^x \left(a + \frac{1}{a} - \sqrt{2} \right)^x = 2^x \quad (13)$$

$$a = \sqrt[5]{2-\sqrt[5]{2}} = \sqrt[5]{(2-\sqrt[5]{2})^5} = \sqrt[5]{2-\sqrt[5]{2}}$$

$$(\sqrt[5]{2-\sqrt[5]{2}} + \sqrt[5]{2+\sqrt[5]{2}} + \sqrt[5]{2})^x (\sqrt[5]{2-\sqrt[5]{2}} + \sqrt[5]{2+\sqrt[5]{2}} - \sqrt[5]{2})^x = 2^x$$

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

$$(1 + 2\sqrt[5]{2} + \sqrt[5]{2})^x (1 - 2\sqrt[5]{2} + \sqrt[5]{2})^x$$

$$1 - (1 + 2\sqrt[5]{2} + 1 + 2\sqrt[5]{2} + 1) = 1 - 2\sqrt[5]{2} \quad L=2$$

$$A = \mu^{\frac{1}{10}} \chi \mu^{\frac{1}{10}} \chi \mu^{\frac{1}{10}} = \mu^{\frac{1}{2}} \chi \mu^{\frac{1}{2}} = \mu^{\frac{1}{2}} K \quad (1)$$

$$(PA)^{\frac{1}{\mu}} = (\mu^{\frac{1}{2}})^{\frac{1}{\mu}} = \frac{1}{\mu}$$

$$\sqrt[\mu]{a} = \mu \sqrt[\mu]{a}^{\frac{1}{\mu}} \quad (2)$$

$$\frac{a^{\frac{1}{\mu}}}{a^{\frac{1}{\mu}}} = \mu^{\mu} \quad a^{-\frac{1}{\mu}} = \mu^{\mu} \quad a^{\frac{1}{\mu}} = \frac{1}{\mu^{\mu}} \Rightarrow a = \frac{1}{\mu^{\mu}}$$

$$\frac{\mu(\sqrt{\mu}-1)}{1+\sqrt{\mu}} \times \frac{\sqrt{\mu}-1}{\sqrt{\mu}-1} = \frac{\mu(\mu+1-\sqrt{\mu})}{\mu} = 1-\sqrt{\mu}$$

$$\left(\frac{\sqrt{x+a} - \sqrt{x-f}}{\mu} \right) (\sqrt{x+a} + \sqrt{x-f}) = \frac{x+a - x+f}{\mu} = \frac{a+f}{\mu} \quad (10)$$

$$\sqrt{x+a} + \sqrt{x-f} = \frac{a}{\mu} + 1$$

$$\sqrt{x+a} + \sqrt{x-f} - 1 = \frac{a}{\mu} + 1 - 1 = \left(\frac{a}{\mu} \right)$$