

منقول (۱)

$$\begin{aligned} P_1 &= P \\ P_1 + E_1 &= P_{\Delta} \\ P_1 + E_1 + 4I &= V_{E\Delta} \\ P_1 + E_1 + 4I + A &= E_{104A} \end{aligned}$$

باسمہ بجز

$$\text{الف) } (K + \sqrt{U})^{-1/2} \times (1 + \sqrt{U})^{1/2} = \frac{(1 + \sqrt{U})^{1/2}}{(K + \sqrt{U})^{1/2}} = \sqrt{\frac{1 + \sqrt{U}}{K + \sqrt{U}}} = \sqrt{\frac{1}{K}} \quad (P_{\text{نقطة}})$$

$$(1+\sqrt{v})^p = 1+v+p\sqrt{v} = 1+p\sqrt{v} = p(\sqrt{v}+1) \quad \Delta$$

$$\text{b) } \frac{\sqrt{2} + \sqrt{5}}{\sqrt{2}(\sqrt{5} + \sqrt{2})} \approx \frac{1}{\sqrt{2}} \Rightarrow \frac{\sqrt{10} - \sqrt{10}}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{4 - 10} - \sqrt{4 + 10}}{2}$$

$$\left. \begin{array}{l} \sqrt{1+\omega} \\ \sqrt{1-\omega} \end{array} \right\} \Rightarrow \frac{\sqrt{1+\omega}^p - \sqrt{1-\omega}^p}{p} = \frac{|\sqrt{1+\omega}| - |\sqrt{1-\omega}|}{p} = \frac{p}{p} = 1$$

سوال ۳۰

الف) $\frac{\sqrt{\lambda + \sqrt{\mu}}}{\omega - \sqrt{q}} - \left(\sqrt{\frac{\mu}{q}} - 1 \right)^{-1} = \frac{\mu \sqrt{\mu} + \mu \sqrt{\mu}}{\mu \sqrt{\mu} - \omega - \frac{\sqrt{q}}{1 + \sqrt{\mu}}} - \frac{1}{\sqrt{\mu} - 1}$

ب) $\frac{(\mu \sqrt{\mu} + \mu \sqrt{\mu})(\sqrt{\mu} + \sqrt{\mu})}{\left[\left(\sqrt{\mu} + \frac{\mu}{\sqrt{\mu}} \right) - \sqrt{\mu} \right] (\sqrt{\mu} + \sqrt{\mu})} - \frac{(\mu \sqrt{\mu} + 1)}{\frac{\mu}{\sqrt{\mu}}} \sqrt{\mu} + \sqrt{\mu} - \sqrt{\mu} - 1 = \sqrt{\mu} - 1$

$$\text{ج) } \frac{\sqrt{P_1 V_1} - 1}{P_1 + \sqrt{P_1}} + (P_1 + \sqrt{P_1})^{-1} = \left(\frac{\sqrt{P_1 V_1} - 1}{P_1 + \sqrt{P_1}} \times \frac{\sqrt{P_1} - 1}{\sqrt{P_1} - 1} \right) + \left(\frac{1}{P_1 + \sqrt{P_1}} + \frac{P_1 + \sqrt{P_1}}{P_1 + \sqrt{P_1}} \right)$$

(الف) $\frac{\sqrt{1+\sqrt{x}} + \sqrt{\sqrt{x}-1}}{\sqrt{\sqrt{x}-\sqrt{x}}}$ - ۲ = $\frac{\sqrt{1+\sqrt{x}} + \sqrt{\sqrt{x}-1}}{\sqrt{\sqrt{x}-\sqrt{x}}} \times \frac{\sqrt{\sqrt{x}+1}}{\sqrt{\sqrt{x}+1}}$ (سوال ۲)

$$= \frac{(\sqrt{1+\sqrt{2}} + \sqrt{\sqrt{2}-1})(\sqrt{\sqrt{2}} - \sqrt{2})}{\sqrt{(2\sqrt{2} - 2\sqrt{2})(\sqrt{2} - \sqrt{2})}} = \frac{(\sqrt{1+\sqrt{2}} + \sqrt{\sqrt{2}-1})(\sqrt{\sqrt{2}} - \sqrt{2})}{0}$$

ب) $\frac{K}{\sqrt{\frac{10}{V}}} \sqrt{P \Delta} \times \frac{K}{\sqrt{14P}} \times \sqrt{\frac{F}{V} \sqrt{F}}$
 $\frac{10^{1/4}}{\sqrt{P \Delta}} \sqrt{P \Delta} \times \frac{K}{\sqrt{14P}} \times \sqrt{\frac{F}{V} \sqrt{F}}$
 $\rightarrow P^{1/4} \times 10 \times P^{1/2} \times 1 \times 1 \times P^{1/4} = 10$
 ≈ 14

سؤال ٥

$$\frac{10^9 (1 + 10 + 10^2 + \dots + 10^9)}{10^{9-1} (1 + 10 + 10^2 + \dots + 10^9)} = \frac{10^9 \left(\frac{10^{10} - 1}{10 - 1} \right)}{10^{8-1} \left(\frac{10^{10} - 1}{10 - 1} \right)} = \frac{10^{9-1}}{10^{8-1}} = 1 \Rightarrow 9 = 8$$

سؤال ٦

$$a = \sqrt[4]{14 - 10\sqrt{10}}$$

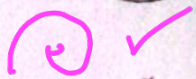
$$b = \sqrt[4]{14 + 10\sqrt{10}}$$

$$\Rightarrow (a^4 + b^4 - 2ab)^4 (a^4 + b^4 + 2ab)^4 = 2(1 - \sqrt{10})$$

$$(a^4 + b^4)^4 - 4a^4b^4(a^4 + b^4)^2 + 4a^4b^4(a^4 + b^4)^2 - 2a^4b^4(a^4 + b^4)^2 = 2(1 - \sqrt{10})$$

$$\left. \begin{aligned} 10^4 - 14\sqrt{10} &= 2(1 - \sqrt{10}) \\ 14(1 - \sqrt{10}) &= 2(1 - \sqrt{10}) \end{aligned} \right\} = \left((\sqrt[4]{14 - 10\sqrt{10}})^4 + (\sqrt[4]{14 + 10\sqrt{10}})^4 - 2\sqrt{(14 - 10\sqrt{10})(14 + 10\sqrt{10})} \right)^4$$

$$\Rightarrow 2 = 14$$



$$a = \sqrt[4]{1 - 4\sqrt{10}}$$

$$= \sqrt[4]{(1 - \sqrt{10})^4}$$

$$\sqrt[4]{1 - \sqrt{10}} = a$$

$$\left(a + \frac{1}{a} + \sqrt{10} \right)^4 \left(a + \frac{1}{a} - \sqrt{10} \right)^4 = 10^4$$

$$\left(\left(a + \frac{1}{a} \right)^4 - 10 \right)^4 = \left(a^4 + \frac{1}{a^4} + 10 - 10 \right)^4 = 10^4$$

$$\left(1 - \sqrt{10} + \frac{1}{1 - \sqrt{10}} \right)^4 = (1 - \sqrt{10} + 1 + \sqrt{10})^4 = 2^4 = 16 \Rightarrow 1^4 = 16 \Rightarrow 1 = 4 \Rightarrow 1 = 4$$

سؤال ٧



$$A = \sqrt[4]{14\sqrt{10}} \left(\frac{1}{4} \right)^{\frac{1}{10}} = 10^{\frac{1}{10}} \times 10^{\frac{1}{10}} = 10^{\frac{2}{10}} = 10^{\frac{1}{5}} = 10$$

سؤال ٨

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



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

سؤال ٩

$$\frac{\frac{1}{a} - 1}{1 + \sqrt{10}} = \frac{\frac{1}{\sqrt{10}} - 1}{1 + \sqrt{10}} = \frac{\frac{1 - \sqrt{10}}{\sqrt{10}}}{1 + \sqrt{10}} = \frac{1 - \sqrt{10}}{\sqrt{10}(1 + \sqrt{10})} = \frac{1 - \sqrt{10}}{10 + 10\sqrt{10}}$$

$$\frac{10(\sqrt{10} - 1)}{\sqrt{10} + 1} \times \frac{\sqrt{10} - 1}{\sqrt{10} - 1} = \frac{10(\sqrt{10} - 1)^2}{10 - 1} = \frac{10(10 - 2\sqrt{10} + 1)}{9} = \frac{110 - 20\sqrt{10}}{9} = 11 - 2\sqrt{10}$$

سؤال ١٠

$$\sqrt{x+a} - \sqrt{x-a} = 2 \rightarrow (\sqrt{x+a} - \sqrt{x-a})(\sqrt{x+a} + \sqrt{x-a}) = 2(\sqrt{x+a} + \sqrt{x-a})$$

$$x+a - x+a = 2\sqrt{x+a} + \sqrt{x-a} \rightarrow \frac{a+x}{1} = \sqrt{x+a} + \sqrt{x-a}$$

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



۱. از این به بعد به خاطر وجود عامل ۲ در یکان صفی شود.

باید از پرانتز اول ۳+۱ و پرانتز دوم ۴+۲ فقط حساب کرد

پراقتزاول

$$1 + 4 = 5$$

پراقتزدوم

$$(2 + 4) = 6$$

$$5 \times 6 = 30 \rightarrow \text{رقم یکان}$$

۴- الف ←

$$\frac{\overbrace{\sqrt{1+\sqrt{3}} + \sqrt{\sqrt{3}-1}}^A}{\sqrt{\sqrt{3}-2}} - 2$$

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

$$2\sqrt{3} + 2\sqrt{2} \rightarrow A = \sqrt{2} (\sqrt{\sqrt{3}+2})$$

$$\rightarrow \sqrt{2} \times \sqrt{\frac{\sqrt{3}+2}{\sqrt{3}-2}} = \sqrt{2} (\sqrt{3} + \sqrt{2}) - 2 = \sqrt{4}$$

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