

$$\begin{aligned}
 ((a-b)^x)^y ((a+b)^x)^y &= ((a-b)^x (a+b)^x)^y ((a^x - b^x)^y)^y \\
 &= ((\sqrt[y]{a^x - b^x} - \sqrt[y]{a^x + b^x})^y)^y = \sqrt{a^x - b^x} + \sqrt{a^x + b^x} - \sqrt{a^x - b^x} - \sqrt{a^x + b^x} \quad (P) \\
 &= (\sqrt{a^x - b^x} - \sqrt{a^x + b^x})^y = x^x + 1 - 1\sqrt{1^x} - x^x - 14\sqrt{x} = 14(x - \sqrt{x}) \\
 \Rightarrow x &= 14
 \end{aligned}$$

$$\begin{aligned}
 \left(\left(a + \frac{1}{a} \right)^x - (\sqrt{x})^x \right)^y &= \left(a^x + \frac{1}{a^x} + x - x \right)^y \\
 a &= \sqrt[x]{(x - \sqrt{x})^y} = \sqrt{x - \sqrt{x}} \Rightarrow \left(x - \sqrt{x} + \frac{1}{x - \sqrt{x}} \right)^y = x^x \quad (P) \\
 \Rightarrow (x - \sqrt{x} + x + \sqrt{x})^y &= x^x \Rightarrow (x)^y = x^x \Rightarrow x = x
 \end{aligned}$$

$$\begin{aligned}
 A &= \sqrt[10]{x^{10}} \times \sqrt[y]{x^x} = \sqrt[x]{x^x} \times \sqrt[y]{x^x} = \sqrt[x]{x^x} = x \\
 (x \cdot A)^{-\frac{1}{x}} &= (x)^{-\frac{1}{x}} = \sqrt[x]{\frac{1}{x}} = \frac{1}{\sqrt[x]{x}} \quad (P)
 \end{aligned}$$

$$\begin{aligned}
 \sqrt[n]{a} &= x \sqrt[n]{a^{1/d}} \Rightarrow x \sqrt[n]{a^{1/d}} = 1 \Rightarrow x \sqrt[n]{a^{1/d}} = 1 \\
 \Rightarrow a &= \sqrt[n]{\frac{1}{x^n}} \Rightarrow \frac{1}{a} - x = \sqrt[n]{x} - x = x \sqrt[n]{x} - x \\
 \frac{x(\sqrt[n]{x} - 1)}{1 + \sqrt[n]{x}} &\times \frac{\sqrt[n]{x} - 1}{\sqrt[n]{x} - 1} = \frac{x(x - \sqrt[n]{x})}{x + 1} = \frac{x(x - \sqrt[n]{x})}{x + 1} \quad (P)
 \end{aligned}$$

$$\begin{aligned}
 \sqrt{x+a} - \sqrt{x-\varepsilon} &= y = \quad (P) \\
 (\sqrt{x+a} - \sqrt{x-\varepsilon})(\sqrt{x+a} + \sqrt{x-\varepsilon}) &= y(\sqrt{x+a} + \sqrt{x-\varepsilon}) \\
 \Rightarrow x+a - x+\varepsilon &= y(\sqrt{x+a} + \sqrt{x-\varepsilon}) \\
 \Rightarrow a+\varepsilon &= \sqrt{x+a} + \sqrt{x-\varepsilon} \Rightarrow \sqrt{x+a} + \sqrt{x-\varepsilon} = y = \frac{a}{y}
 \end{aligned}$$

* بیاضی کے لیے ہر چیز کو ضرب دینا چاہیے۔