

$$a-b=1$$

4-ая степень

$$a-b=1$$

$$\begin{aligned}(a-b)^4 &= a^4 - 4a^3b + 6a^2b^2 - 4ab^3 + b^4 = \\ &= a^4 + b^4 + 6a^2b^2 - 4ab(a^2 + b^2) = \\ &= a^4 + b^4 + 6a^2b^2 - 4ab(a^2 - 2ab + b^2 + 2ab) = \\ &= a^4 + b^4 + 6a^2b^2 - 4ab((a-b)^2 + 2ab) = \\ &= a^4 + b^4 + 6a^2b^2 - 4ab(1+2ab) = \\ &= a^4 + b^4 - 4ab - 2a^2b^2\end{aligned}$$

$$\sqrt[4]{x} + \sqrt[4]{x-1} = \sqrt[4]{x+1}$$

$$\sqrt[4]{x} = \sqrt[4]{x+1} - \sqrt[4]{x-1} \text{ делим на } \sqrt[4]{x}$$

$$\sqrt[4]{x} \left\{ \frac{x+1}{x} - \sqrt[4]{\frac{x-1}{x}} \right\} = 1 \sqrt[4]{x}$$

$$\frac{x+1}{x} + \frac{x-1}{x} - 4\sqrt[4]{\frac{x^2-1}{x^2}} - 2\sqrt{\frac{x^2-1}{x^2}} = 1$$

$$1 - 4\sqrt[4]{\frac{x^2-1}{x^2}} - 2\sqrt{\frac{x^2-1}{x^2}} = 0$$

$$\sqrt[4]{\frac{x^2-1}{x^2}} = t, t \geq 0$$

$$t = \frac{-2 + \sqrt{6}}{2}$$

$$t = \frac{\sqrt{6} - 2}{2}$$

$$\frac{x^2-1}{x^2} = \left(\frac{\sqrt{6}-2}{2}\right)^4 / 16$$

$$\begin{aligned}(\sqrt{6}-2)^4 &= 196 - 8(\sqrt{6})^3 - 32\sqrt{6} = \\ &= 196 - 8 \cdot 6\sqrt{6} - 32\sqrt{6} = 196 - 80\sqrt{6}\end{aligned}$$

$$\begin{aligned}(\sqrt{6}-2)^4 &= 36 - 4 \cdot 2 \cdot 6 \cdot \sqrt{6} + 6 \cdot 6 \cdot 4 - 4 \cdot \sqrt{6} \cdot 8 + 16 = \\ &= 196 - 80\sqrt{6}\end{aligned}$$

$$1 - \frac{1}{x^2} = \frac{196 - 80\sqrt{6}}{16}$$

$$1 - \frac{1}{x^2} = \frac{49 - 20\sqrt{6}}{4}$$

$$\frac{1}{x^2} = \frac{4}{4} - \frac{49 - 20\sqrt{6}}{4}$$

$$\frac{1}{x^2} = \frac{4 - (49 - 20\sqrt{6})}{4}$$

$$\frac{1}{x^2} = \frac{20\sqrt{6} - 45}{4}$$

$$x^2 = \frac{4}{20\sqrt{6} - 45}$$

$$x = \pm \frac{2}{\sqrt{20\sqrt{6} - 45}} > 1$$

$$\text{ОТВЕТ } x = \frac{2}{\sqrt{20\sqrt{6} - 45}}$$

$$1) 20\sqrt{6} > 45$$

$$2400 > 2025$$

3-ья степень

$$(a-b)^3 = a^3 - b^3 - 3ab(a-b)$$

$$45) \sqrt[3]{x+34} - \sqrt[3]{x-3} = 1$$

$$\text{Ответ: } 30; -61$$