

**Решите уравнение:**

**а)  $4^x = \frac{1}{16}$ ;**

**в)  $\left(\frac{1}{6}\right)^x = 36$ ;**

**б)  $7^x = \frac{1}{343}$ ;**

**г)  $0,2^x = 0,00032$ .**

**Решите уравнение:**

**а)  $10^x = \sqrt[4]{1000}$ ;**

**в)  $0,3^x = \sqrt[4]{0,0081}$ ;**

**б)  $5^x = \frac{1}{\sqrt[3]{25}}$ ;**

**г)  $\left(\frac{1}{5}\right)^x = 25\sqrt{5}$ .**

**а)  $0,3^x = \frac{1000}{27}$ ;**

**в)  $0,7^x = \frac{1000}{343}$ ;**

**б)  $\left(\frac{4}{5}\right)^x = \frac{25}{16}$ ;**

**г)  $\left(\frac{3}{2}\right)^x = \frac{16}{81}$ .**

$$\text{a) } 2^{x+1} = 4;$$

$$\text{B) } 0,4^{4-5x} = 0,16\sqrt{0,4}$$

$$\text{б) } 5^{3x-1} = 0,2;$$

$$\text{Г) } \left(\frac{1}{2}\right)^{2-x} = 8\sqrt{2}.$$

$$\text{a) } 3^{1-x} = \left(\frac{1}{3}\right)^{2x+3};$$

$$\text{B) } \left(\frac{1}{6}\right)^{4x-7} = 6^{x-3};$$

$$\text{б) } 6^{2x-8} = 216^x;$$

$$\text{Г) } \left(\frac{2}{3}\right)^{8x+1} = 1,5^{2x-3}.$$

$$\text{a) } 3^{x^2-4,5} \cdot \sqrt{3} = \frac{1}{27};$$

$$\text{B) } \sqrt{2^{-1}} \cdot 2^{x^2-7,5} = \frac{1}{128};$$

$$\text{б) } 0,5^{x^2-5,5} \cdot \sqrt{0,5} = 32;$$

$$\text{Г) } 0,1^{x^2-0,5} \cdot \sqrt{0,1} = 0,001$$

$$\text{a) } 2^x \cdot \left(\frac{3}{2}\right)^x = \frac{1}{9};$$

$$\text{b) } 5^x \cdot 2^x = 0,1^{-3};$$

$$\text{б) } \left(\frac{1}{5}\right)^x \cdot 3^x = \sqrt{\frac{27}{125}};$$

$$\text{г) } 0,3^x \cdot 3^x = \sqrt[3]{0,81}.$$

$$\text{a) } (\sqrt{12})^x \cdot (\sqrt{3})^x = \frac{1}{6};$$

$$\text{b) } (\sqrt[3]{3})^{2x} \cdot (\sqrt[3]{9})^{2x} = 243;$$

$$\text{б) } \left(\frac{\sqrt{10}}{3}\right)^{3x^2-3} = 0,81^{-2x};$$

$$\text{г) } \left(\frac{\sqrt[4]{2}}{\sqrt{3}}\right)^{x^2+4} = 20,25^{x+1}.$$

Решите уравнение:

$$\text{а) } \sqrt{625} \cdot \sqrt{5^{14x-9}} = \sqrt[6]{125 \cdot 5^{6x-12}};$$

$$\text{б) } \sqrt[3]{0,2} \cdot \sqrt{0,2^{2x-\frac{1}{3}}} = \sqrt[3]{0,04^{-3x+6}}.$$

$$\text{а) } \frac{3^{x^2}}{9^x} = 27;$$

$$\text{в) } \frac{7^{x^2}}{49^{3x}} = 7^7;$$

$$\text{б) } \frac{2^{x^2}}{4^x} = 4^4;$$

$$\text{г) } \frac{2^{2x^2}}{4^{3x}} = 4^4.$$

$$\text{a) } 3^{x+1} \cdot 5^x = 675;$$

$$\text{b) } 5 \cdot 2^{3x} \cdot 3^x = 2880;$$

$$\text{б) } 4^{x+2} \cdot 3^{x+1} = 576;$$

$$\text{г) } 2^{2x+1} \cdot 5^x = 16\,000.$$

$$\text{a) } 27^{\sqrt{x-1}} = \sqrt{9^{x+1}};$$

$$\text{b) } 3^x \cdot \left(\frac{1}{3}\right)^{\sqrt{x+1}} = 243;$$

$$\text{б) } 2^{\sqrt{13-x^2}} = \sqrt{2} \cdot \sqrt{32};$$

$$\text{г) } \left(0,1^{\sqrt{x+1}}\right)^{\sqrt{x+6}} = \frac{1}{10^6}.$$

$$\text{a) } 2^x = 3^x; \quad \text{б) } 25^x = 7^{2x}; \quad \text{в) } \left(\frac{1}{3}\right)^{2x} = 8^x; \quad \text{г) } \left(\frac{1}{4}\right)^x = \left(\frac{1}{5}\right)^x.$$

$$\text{a) } 3^x \cdot 7^{x+2} = 49 \cdot 4^x; \quad \text{в) } 2^{x+1} \cdot 5^{x+3} = 250 \cdot 9^x;$$

$$\text{б) } 6^{2x+4} = 2^{8+x} \cdot 3^{3x}; \quad \text{г) } 35^{4x+2} = 5^{3x+4} \cdot 7^{5x}.$$

$$\text{a) } 2^{4x+2} \cdot 5^{-3x-1} = 6,25 \cdot 2^{x+1}; \quad \text{б) } 3^{5x-1} \cdot 7^{2x-2} = 3^{3x+1}.$$

$$\text{a) } 4(\sqrt{5} - 2)^{x-12} = \left(\frac{2}{\sqrt{5} + 2}\right)^{x-12};$$

$$\text{б) } 9(3 - \sqrt{8})^{2x+1} = \left(\frac{3}{3 + \sqrt{8}}\right)^{2x+1}.$$

$$\text{a) } 3^x - 3^{x+3} = -78; \quad \text{b) } 2 \cdot \left(\frac{1}{7}\right)^{3x+7} - 7 \cdot \left(\frac{1}{7}\right)^{3x+8} = 49;$$

$$\text{б) } 5^{2x-1} - 5^{2x-3} = 4,8; \quad \text{г) } \left(\frac{1}{3}\right)^{5x-1} + \left(\frac{1}{3}\right)^{5x} = \frac{4}{9}.$$

$$\text{a) } 7^{2x+1} + 7^{2x+2} + 7^{2x+3} = 57;$$

$$\text{б) } 2^{4x-1} + 2^{4x-2} - 2^{4x-3} = 160;$$

$$\text{в) } 100 \cdot 0,3^{4x+2} - 0,09^{2x} + 5 \cdot 0,0081^x = 13;$$

$$\text{г) } \left(\frac{1}{16}\right)^{x+0,25} + \left(\frac{1}{4}\right)^{2x+1} - \left(\frac{1}{2}\right)^{4x+3} = \frac{5}{4}.$$



$$\text{a) } 2^{3x} - 6 \cdot 2^{2x} + 12 \cdot 2^x - 8 = 0;$$

$$\text{б) } \left(\frac{1}{2}\right)^{3x} - 12 \cdot \left(\frac{1}{2}\right)^{2x} + 48 \cdot \left(\frac{1}{2}\right)^x - 64 = 0;$$

$$\text{в) } 5^x + 6 \cdot (\sqrt[3]{25})^x + 12 \cdot (\sqrt[3]{5})^x + 8 = 343;$$

$$\text{г) } 2^x + 3 \cdot (\sqrt[3]{4})^x + 3 \cdot (\sqrt[3]{2})^x + 1 = 27.$$

$$\text{a) } (3^{2x} - 1) \cdot (3^{4x} + 3^{2x} + 1) = 26;$$

$$\text{б) } (5^{2x} + 1) \cdot (5^{4x} - 5^{2x} + 1) = 126;$$

$$\text{в) } \left( (\sqrt{7})^x - 1 \right) \cdot \left( 7^x + (\sqrt{7})^x + 1 \right) = 342;$$

$$\text{г) } \left( (\sqrt[3]{11})^x + 1 \right) \cdot \left( (\sqrt[3]{121})^x - (\sqrt[3]{11})^x + 1 \right) = 122.$$