

Контрольная домашняя работа № 3
Показательные уравнения

№	1 задание	2 задание	3 задание	4 задание	5 задание
1	$\left(\frac{1}{36}\right)^{x+3} = 36\sqrt{6}$	$0,2 \cdot 25^{4x-7} = \left(\frac{\sqrt{5}}{5}\right)^{-x}$	$2^{2x+1} + 2^{2x-1} + 3 \cdot 2^{2x} = 88$	$5^{2x+2} = 75 + 19 \cdot 5^x + 23 \cdot 5^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{646}{27} \\ 9^x + 2^y = \frac{325}{81} \end{cases}$
2	$\left(\frac{1}{16}\right)^{x-1} = \sqrt{2}$	$0,5 \cdot 4^{4x-7} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$7^{3x} - 2 \cdot 7^{3x-2} - 7^{3x-1} = 280$	$2^{2x+1} = 2 - 3 \cdot 2^x - 3 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 4^{x-1} - 4 \cdot 5^{y+1} = -\frac{1595}{16} \\ 16^x + 5^y = \frac{81}{16} \end{cases}$
3	$\left(\frac{1}{16}\right)^{x+2} = 2$	$0,2 \cdot 25^{2x-3} = \left(\frac{\sqrt{5}}{5}\right)^{-x}$	$2^{2x-1} + 2^{2x-3} - 3 \cdot 2^{2x-2} = -2$	$2^{2x+5} = 96 + 17 \cdot 2^x + 27 \cdot 2^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{106}{9} \\ 9^x + 2^y = \frac{19}{9} \end{cases}$
4	$\left(\frac{1}{27}\right)^{x+2} = \sqrt{3}$	$0,2 \cdot 25^{6x-11} = \left(\frac{\sqrt{5}}{5}\right)^{-x}$	$4^{2x+1} - 4^{2x-1} - 3 \cdot 4^{2x} = 192$	$2^{2x+6} = 10 - 23 \cdot 2^x + 59 \cdot 2^{2x}$	$\begin{cases} 3 \cdot 2^{x-1} - 2 \cdot 3^{y+1} = -\frac{69}{4} \\ 4^x + 3^y = \frac{13}{4} \end{cases}$
5	$\left(\frac{1}{16}\right)^{x-3} = 32$	$0,5 \cdot 4^{2x-3} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$7^{2x+1} - 7^{2x-1} - 2 \cdot 7^{2x} = 238$	$2^{2x+1} = 224 - 3 \cdot 2^x - 3 \cdot 2^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{322}{27} \\ 9^x + 2^y = \frac{163}{81} \end{cases}$

6	$\left(\frac{1}{16}\right)^{x-3} = 2$	$0,5 \cdot 4^{5x-9} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$3^{4x+1} + 3^{4x-3} - 4 \cdot 3^{4x-1} = 138$	$2^{2x+4} = 128 + 58 \cdot 2^x + 13 \cdot 2^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{430}{9} \\ 9^x + 2^y = \frac{73}{9} \end{cases}$
7	$\left(\frac{1}{32}\right)^{x-2} = 4\sqrt{2}$	$0,25 \cdot 4^{9x-32} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$3^{3x+2} - 3^{3x-1} - 4 \cdot 3^{3x+1} = -90$	$3^{2x+4} = 81 + 15 \cdot 3^x + 77 \cdot 3^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{160}{27} \\ 9^x + 2^y = \frac{82}{81} \end{cases}$
8	$\left(\frac{1}{9}\right)^{x+3} = 9\sqrt{3}$	$0,125 \cdot 4^{9x-45} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$4^{4x-1} + 3 \cdot 4^{4x-3} - 4^{4x-2} = 60$	$2^{2x+3} = 4 + 2^x + 5 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{35}{4} \\ 4^x + 5^y = \frac{5}{4} \end{cases}$
9	$\left(\frac{1}{27}\right)^{x-3} = 3\sqrt{3}$	$0,5 \cdot 4^{6x-11} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$3^{3x+1} + 2 \cdot 3^{3x-1} + 3^{3x} = 126$	$2^{2x+4} = 384 + 34 \cdot 2^x + 11 \cdot 2^{2x}$	$\begin{cases} 3 \cdot 4^{x-1} - 4 \cdot 3^{y+1} = -\frac{189}{16} \\ 16^x + 3^y = \frac{17}{16} \end{cases}$
10	$\left(\frac{1}{16}\right)^{x-2} = \sqrt{2}$	$0,125 \cdot 4^{7x-33} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$2^{4x+1} + 3 \cdot 2^{4x-1} + 2^{4x} = 72$	$4^{2x+3} = 20 - 11 \cdot 4^x + 61 \cdot 4^{2x}$	$\begin{cases} 4 \cdot 3^{x-1} - 3 \cdot 4^{y+1} = -\frac{104}{9} \\ 9^x + 4^y = \frac{10}{9} \end{cases}$
11	$\left(\frac{1}{64}\right)^{x-2} = 4\sqrt{2}$	$0,04 \cdot 25^{3x-8} = \left(\frac{\sqrt{5}}{25}\right)^{-x}$	$5^{2x+5} + 5^{2x+3} - 2 \cdot 5^{2x+4} = 80$	$2^{2x+3} = 20 - 11 \cdot 2^x + 5 \cdot 2^{2x}$	$\begin{cases} 3 \cdot 2^{x-1} - 2 \cdot 3^{y+1} = -\frac{141}{8} \\ 4^x + 3^y = \frac{49}{16} \end{cases}$

12	$\left(\frac{1}{8}\right)^{x+2} = 2\sqrt{2}$	$0,25 \cdot 4^{2x-4} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$3^{3x+1} + 3^{3x-2} + 2 \cdot 3^{3x} = 138$	$3^{2x+4} = 18 - 3^x + 76 \cdot 3^{2x}$	$\begin{cases} 5 \cdot 4^{x-1} - 4 \cdot 5^{y+1} = -\frac{315}{16} \\ 16^x + 5^y = \frac{17}{16} \end{cases}$
13	$\left(\frac{1}{64}\right)^{x-3} = 8$	$0,5 \cdot 4^{3x-5} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$2^{2x+3} - 2^{2x+1} + 2^{2x+2} = 160$	$2^{2x+5} = 192 + 2 \cdot 2^x + 27 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{195}{4} \\ 4^x + 5^y = \frac{21}{4} \end{cases}$
14	$\left(\frac{1}{16}\right)^{x+3} = 4\sqrt{2}$	$0,04 \cdot 25^{5x-16} = \left(\frac{\sqrt{5}}{25}\right)^{-x}$	$2^{2x-1} + 2^{2x-3} + 2^{2x-2} = 56$	$4^{2x+2} = 64 + 4 \cdot 4^x + 13 \cdot 4^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{395}{8} \\ 4^x + 5^y = \frac{81}{16} \end{cases}$
15	$\left(\frac{1}{64}\right)^{x+3} = 32$	$0,125 \cdot 4^{6x-27} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$5^{2x+1} - 5^{2x-1} - 2 \cdot 5^{2x} = 70$	$2^{2x+5} = 4 - 4 \cdot 2^x + 29 \cdot 2^{2x}$	$\begin{cases} 3 \cdot 2^{x-1} - 2 \cdot 3^{y+1} = -\frac{285}{16} \\ 4^x + 3^y = \frac{193}{64} \end{cases}$
16	$\left(\frac{1}{27}\right)^{x-2} = 9\sqrt{3}$	$0,25 \cdot 4^{5x-16} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$5^{2x+1} + 5^{2x-1} - 4 \cdot 5^{2x} = 30$	$2^{2x+3} = 112 - 5 \cdot 2^x + 5 \cdot 2^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{52}{9} \\ 9^x + 2^y = \frac{10}{9} \end{cases}$
17	$\left(\frac{1}{9}\right)^{x-2} = \sqrt{3}$	$0,125 \cdot 4^{3x-9} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$2^{3x+1} + 2^{3x-2} - 3 \cdot 2^{3x-1} = 48$	$3^{2x+1} = 405 + 71 \cdot 3^x + 3^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{214}{9} \\ 9^x + 2^y = \frac{37}{9} \end{cases}$

18	$\left(\frac{1}{4}\right)^{x-1} = 2\sqrt{2}$	$0,25 \cdot 4^{3x-8} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$5^{2x+1} + 5^{2x-1} + 4 \cdot 5^{2x} = 230$	$2^{2x+6} = 24 - 14 \cdot 2^x + 61 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{795}{16} \\ 4^x + 5^y = \frac{321}{64} \end{cases}$
19	$\left(\frac{1}{25}\right)^{x+3} = 25\sqrt{5}$	$0,25 \cdot 4^{4x-12} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$3^{2x-1} + 3^{2x-3} - 3^{2x-2} = 21$	$3^{2x+1} = 3 + 3^x + 3^{2x}$	$\begin{cases} 3 \cdot 4^{x-1} - 4 \cdot 3^{y+1} = -\frac{573}{16} \\ 16^x + 3^y = \frac{49}{16} \end{cases}$
20	$\left(\frac{1}{16}\right)^{x-2} = 2$	$0,125 \cdot 4^{5x-21} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$2^{2x-1} - 2^{2x-3} - 3 \cdot 2^{2x-2} = -6$	$3^{2x+3} = 162 - 3 \cdot 3^x + 22 \cdot 3^{2x}$	$\begin{cases} 4 \cdot 3^{x-1} - 3 \cdot 4^{y+1} = -\frac{320}{27} \\ 9^x + 4^y = \frac{82}{81} \end{cases}$
21	$\left(\frac{1}{8}\right)^{x-3} = \sqrt{2}$	$0,5 \cdot 4^{8x-15} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$2^{2x+3} + 2^{2x+1} - 3 \cdot 2^{2x+2} = -8$	$2^{2x+5} = 48 - 10 \cdot 2^x + 29 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{155}{16} \\ 4^x + 5^y = \frac{65}{64} \end{cases}$
22	$\left(\frac{1}{81}\right)^{x-1} = \sqrt{3}$	$0,04 \cdot 25^{2x-4} = \left(\frac{\sqrt{5}}{25}\right)^{-x}$	$2^{2x+3} + 2^{2x+1} + 2^{2x+2} = 56$	$4^{2x+2} = 384 + 34 \cdot 4^x + 11 \cdot 4^{2x}$	$\begin{cases} 5 \cdot 3^{x-1} - 3 \cdot 5^{y+1} = -\frac{670}{9} \\ 9^x + 5^y = \frac{46}{9} \end{cases}$
23	$\left(\frac{1}{27}\right)^{x-1} = 3\sqrt{3}$	$0,5 \cdot 4^{7x-13} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$2^{2x-1} + 2^{2x-3} - 2^{2x-2} = 24$	$5^{2x+1} = 20 - 7 \cdot 5^x + 2 \cdot 5^{2x}$	$\begin{cases} 4 \cdot 3^{x-1} - 3 \cdot 4^{y+1} = -\frac{1292}{27} \\ 9^x + 4^y = \frac{325}{81} \end{cases}$

24	$\left(\frac{1}{8}\right)^{x+1} = \sqrt{2}$	$0,125 \cdot 4^{4x-15} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$4^{2x+5} + 4^{2x+3} + 3 \cdot 4^{2x+4} = 116$	$4^{2x+3} = 128 + 54 \cdot 4^x + 59 \cdot 4^{2x}$	$\begin{cases} 5 \cdot 2^{x-1} - 2 \cdot 5^{y+1} = -\frac{75}{8} \\ 4^x + 5^y = \frac{17}{16} \end{cases}$
25	$\left(\frac{1}{16}\right)^{x+2} = 4\sqrt{2}$	$0,25 \cdot 4^{6x-20} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$4^{3x+1} + 4^{3x-2} - 4^{3x-1} = 244$	$2^{2x+2} = 32 - 12 \cdot 2^x - 2^{2x}$	$\begin{cases} 5 \cdot 3^{x-1} - 3 \cdot 5^{y+1} = -\frac{130}{9} \\ 9^x + 5^y = \frac{10}{9} \end{cases}$
26	$\left(\frac{1}{4}\right)^{x+1} = 2\sqrt{2}$	$0,25 \cdot 4^{7x-24} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$3^{3x+1} + 3^{3x-1} - 4 \cdot 3^{3x-1} = 48$	$2^{2x+3} = 6 - 13 \cdot 2^x + 3 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 3^{x-1} - 3 \cdot 5^{y+1} = -\frac{400}{27} \\ 9^x + 5^y = \frac{82}{81} \end{cases}$
27	$\left(\frac{1}{36}\right)^{x+2} = 6\sqrt{6}$	$0,25 \cdot 4^{8x-28} = \left(\frac{\sqrt{2}}{4}\right)^{-x}$	$3^{4x+1} + 3^{4x-3} + 3^{4x-1} = 273$	$4^{2x+2} = 20 - 11 \cdot 4^x + 13 \cdot 4^{2x}$	$\begin{cases} 4 \cdot 3^{x-1} - 3 \cdot 4^{y+1} = -\frac{428}{9} \\ 9^x + 4^y = \frac{37}{9} \end{cases}$
28	$\left(\frac{1}{64}\right)^{x+3} = 4\sqrt{2}$	$0,125 \cdot 4^{8x-39} = \left(\frac{\sqrt{2}}{8}\right)^{-x}$	$5^{3x+1} - 2 \cdot 5^{3x-1} - 3 \cdot 5^{3x} = 200$	$2^{2x+6} = 160 + 17 \cdot 2^x + 61 \cdot 2^{2x}$	$\begin{cases} 3 \cdot 2^{x-1} - 2 \cdot 3^{y+1} = -\frac{45}{8} \\ 4^x + 3^y = \frac{17}{16} \end{cases}$
29	$\left(\frac{1}{64}\right)^{x-1} = 2$	$0,5 \cdot 4^{9x-17} = \left(\frac{\sqrt{2}}{2}\right)^{-x}$	$2^{4x+1} - 2^{4x-3} - 3 \cdot 2^{4x} = -288$	$2^{2x+3} = 64 + 22 \cdot 2^x + 3 \cdot 2^{2x}$	$\begin{cases} 5 \cdot 3^{x-1} - 3 \cdot 5^{y+1} = -\frac{2020}{27} \\ 9^x + 5^y = \frac{406}{81} \end{cases}$

30	$\left(\frac{1}{9}\right)^{x-1} = 3\sqrt{3}$	$0,2 \cdot 25^{3x-5} = \left(\frac{\sqrt{5}}{5}\right)^{-x}$	$7^{2x+5} - 7^{2x+3} - 3 \cdot 7^{2x+4} = 189$	$2^{2x+1} = 48 - 10 \cdot 2^x - 2^{2x}$	$\begin{cases} 2 \cdot 3^{x-1} - 3 \cdot 2^{y+1} = -\frac{646}{27} \\ 9^x + 2^y = \frac{325}{81} \end{cases}$
----	--	--	--	---	---