

ЗАДАЦИ ЗА ВЕЖБУ

Одредити скуп решења једначина:

1. $\frac{x-1}{3} + \frac{1}{2}x^2 = \frac{3(x-1)}{8} - \frac{x+11}{24};$
2. $\frac{b+x}{a-x} - \frac{b-x}{a+x} = \frac{(a^2-b^2)x^2}{a^2-x^2};$
3. $\frac{x^2}{x^2-1} - \frac{x^2-1}{x^2} = \frac{3}{2};$
4. $2\left(\frac{x^2+1}{x}\right)^2 - 9\left(\frac{x^2+1}{x}\right) + 10 = 0;$
5. $2x^6 + 3x^5 - 18x^4 + 18x^2 - 3x - 2 = 0;$
6. $\sqrt{x^2 - 5x + 10} = 8 - 2x;$
7. $\sqrt{1 - \sqrt{x^4 - x^2}} = x - 1;$
8. $\sqrt{x+3} + \sqrt{x+8} = \sqrt{x+24};$
9. $3\sqrt{x-2} - 2\sqrt{x-5} = \sqrt{3x-2};$
10. $2^{x-1} - 2^{x-3} = 3^{x-2} - 3^{x-3};$
11. $20^x - 6 \cdot 5^x + 10^x = 0;$
12. $3^{\frac{x-1}{2}} - 2^{\frac{x+1}{3}} = 2^{\frac{x-2}{3}} + 3^{\frac{x-3}{2}};$
13. $\log(5-x) + 2\log\sqrt{3-x} = 1;$
14. $\log_{\sqrt{5}}(4^x - 6) - \log_{\sqrt{5}}(2^x - 2) = 2;$
15. $\log_{3x+7}(9 + 12x + 4x^2) + \log_{2x+3}(6x^2 + 23x + 21) = 4;$
16. $\sin \frac{x}{2} + \cos x = 1;$
17. $\sin 5x + \sin x + 2\sin^2 x = 1;$
18. $\sin 2x + \operatorname{tg} x - 2 = 0.$

Одредити скуп решења неједначина:

19. $\sqrt{x^2 - 3x - 10} < 8 - x;$
20. $3\sqrt{6+x-x^2} + 2 > 4x;$
21. $\sqrt{6-x-x^2} < \sqrt{3x+6};$
22. $\sqrt{x+6} > \sqrt{x+1} + \sqrt{2x-5};$

23. $\sqrt{x} + \sqrt{x-1} > \sqrt{x+1};$

24. $2^{4x+2} \cdot 4^{-x^2} - 3 \cdot 2^{2+2x-x^2} + 8 \leq 0;$

25. $5^{2x+1} > 5^x + 4;$

26. $\log_x(x(x^2 - x - 2)) < 3;$

27. $\log 10^{\log(x+16)} > 1 + \log x;$

28. $\log_{\frac{1}{\sqrt{5}}}(6^{x+1} - 36^x) \geq -2;$

29. $\frac{1}{3^x + 5} < \frac{1}{3^{x+1} - 1};$

30. $\log(5^x + x - 20) > x - x \log 2.$