DISEQUAZIONI LOGARITMICHE

1. $\log(2x-2) > \log(x+1)$

2. $\log_{1/2}(2x-1) > \log_{1/2}(3x+2)$

3. $2\log_2 x > \log_2 4(x-1)$

4. $\log_{1/2}(4x-1) + \log_{1/2}(1-x) > \log_{1/2}(3x-1) + \log_{1/2}(1+x)$

5. $\log_5(x-16) + \log_5 x > \log_5 105$

6. $\log_{1/2}(x+3) + \log_{1/2}(x-5) > 2\log_{1/2} x$

7. $\log_{1/2}(x+1) > 0$

8. $\log\sqrt{7x+5} + \log\sqrt{2x+7} < 1 + \log\frac{9}{2}$

9. $\log_{3/5}(2x-5) + \log_{3/5}(4-x) > 2\log_{3/5}(x-2)$

10. $\log_{1/4}(x^2+2x+1) < 2$

11. $\log(x^2-1) - \log(x^2-7x+12) < \log 4$

12. $2\log x - 1 > \log\left(x - \frac{5}{2}\right)$

13. $\log(5-x) + \log(25+5x+x^2) < 3\log(5-x)$

14. $4\log\frac{x}{2} + 3\log\frac{x}{3} > 5\log x - \log 12$

15. $\frac{\log_3(1-x)-1}{\log_3(x^2-7)-2} > 1$

16. $\frac{1-2^x}{1-\log_2 x} > 0$

17. $\log x \log(x-5) > 0$

18. $\log(x^2-7) < 2\log(x+3)$

19. $\log_2\left[\log_2(x+3)\right] > 0$

20. $\log(x+3) + \log(x-7) - \log(1-2x) \geq 0$

21. $\log(x+2) > 1$

22. $\log x - 1 > \frac{2}{\log x}$

23. $\frac{\log(x-3)-1}{1+\log x} < 0$

24. $\log_2^2 x - 6\log_2 x + 8 > 0$

25. $\log_{1/4}(x^2-7x+12) - \log_{1/4}(9-x^2) > 0$

26. $\log_3^2 x - 4\log_3 x + 3 < 0$

27. $\log_5\left(\frac{2-x}{x+3}\right) < \log_5 4$ $\quad [-2 < x < 2]$;

28. $2\log_{\sqrt{3}}(1-x) - \log_{\sqrt{3}}(3-x) < 2$ $\quad \left[\frac{-1-\sqrt{33}}{2} < x < 1\right]$

29. $(\log x)^2 - 7\log x + 12 < 0$ $\quad [1000 < x < 10000]$;

30. $\frac{2}{\log_{\frac{2}{3}} x - 1} > \frac{\log_{\frac{2}{3}} x}{\log_{\frac{2}{3}} x - 1}$ $\quad \left[\frac{4}{9} < x < \frac{2}{3}\right]$

31. $\lg_2 \frac{x+\sqrt{x^2+9}}{2x} > 1$ $\quad \left[0 < x < \frac{3\cdot\sqrt{2}}{4}\right]$

32. $\log_{0,5}\frac{x-3}{x^2-25} > 0$ $\quad \left[\frac{1-\sqrt{89}}{2} < x < 3,\ x > \frac{1+\sqrt{89}}{2}\right]$

33. $\frac{\sqrt{x-1}-1}{\log(x+1)} > 0$ $\quad [x > 2]$

34. $\frac{2^{2x} - 5\cdot 2^x + 4}{\log_2(x-1)} > 0$; $\quad [1 < x < 2]$

35. $\frac{1}{\log x} - \frac{2}{\log(x+1)} > 0$; $\quad \left[1 < x < \frac{1+\sqrt{5}}{2}\right]$

36. $\frac{1}{\log x - \log(6-x)} < 0$ $\quad [0 < x < 3]$

37. $\log_{0,5}\frac{x^4 - x^3 + 6x - x^2 - 1}{(x+3)(2x-x^2)} < 0$ $\quad [x < -3,\ -1 < x < 0,\ 1 < x < 2]$

38. $7^{2-\log x} > 0$ $\quad [x > 0]$

39. $\frac{e^{2x} - e^x - 2}{e^x - 3} > 0$ $\quad [x < \ln 2,\ x > \ln 3]$

40. $2^{x-1} + 2^x + 2^{x+1} > 1$ $\quad \left[x > \log_2 \frac{2}{7}\right]$

41. $\sqrt{\log(x^2-3)} > \sqrt{\log(2x+1)}$; $\quad [x > 1+\sqrt{5}]$

42. $|3^{2x} - 2\cdot 3^x - 3| < 3^x + 7$ $\quad [x < \log_3 5]$

43. $|e^x - 3| > 1$; $\quad \left[x < \ln 2,\ x > \ln 4\right]$

44. $\frac{|x| + \sqrt{x^2-1} - 2}{e^x + 2|x|} < 0$ $\quad \left[-\frac{5}{4} < x \leqslant -1,\ 1 \leqslant x < \frac{5}{4}\right]$

45. $\log|x+1| < 2$; $\quad [-10 < x < 99 \text{ con } x \neq -1]$

46. $\log|x| + 1 < 2$ $\quad [-10 < x < 10 \text{ con } x \neq 0]$

47. $\frac{1+\log(x^2+2)}{(e^x-3)^2} > 0$ $\quad [x \neq \ln 3]$

48. $x[3^x(3^x-4) - 5] < 0$ $\quad [x > 2;\ 0 < x < \log_3 5]$

49. $\log_3[\log_3(2x-5)] < 0$ $\quad [3 < x < 4]$

50. $\frac{|x| + \sqrt{x^2-1} - 2}{e^x + 2|x|} < 0$ $\quad \left[-\frac{5}{4} < x \leqslant -1,\ 1 \leqslant x < \frac{5}{4}\right]$

51. $\frac{(e^x - e)(3^{2x} - 10\cdot 3^x + 9)}{\ln(x+2)} \geqslant 0$ $\quad [-2 < x < -1,\ 0 \leqslant x \leqslant 1,\ x \geqslant 2]$

52. $\frac{\sqrt{\ln x} - 2}{|2x-6| - 12} > 0$ $\quad [1 < x < 9,\ x > e^4]$

Soluzioni:

1. $x > 3$ 2. $x > \frac{1}{2}$ 3. $x > 1$ e $x \neq 2$ 4. $\frac{3}{7} < x < 1$ 5. $x > 21$ 6. $x > 5$ 7. $-1 < x < 0$ 8. $-\frac{5}{7} < x < 10$

9. $\frac{5}{2} < x < \frac{8}{3} \cup 3 < x < 4$ 10. $x < -\frac{5}{4} \cup x > -\frac{3}{4}$ 11. $x < -1 \cup 1 < x < \frac{7}{3} \cup x > 7$ 12. $x > \frac{5}{2}$ e $x \neq 5$

13. $x < 0$ 14. $x > 6$ 15. $-5 < x < -4$ 16. $x > 2$ 17. $x > 6$ 18. $-\frac{8}{3} < x < -\sqrt{7} \cup x > \sqrt{7}$ 19. $x > -1$ 20. $\nexists\, x$

21. $x > 8$ 22. $0 < x < \frac{1}{10} \cup x > 100$ 23. $3 < x < 13$ 24. $0 < x < 4 \cup x > 16$ 25. $\frac{1}{2} < x < 3$ 26. $3 < x < 27$