Esercizi sulle disequazioni esponenziali e logaritmiche

1. $2^x > \frac{1}{16}$ $[x > -4]$
2. $\left(\frac{1}{3}\right)^x > 9$ $[x < -2]$
3. $4^{5x-1} < 2$ $[x < \frac{3}{10}]$
4. $81^x \leq \frac{1}{3}$ $[x \leq -\frac{1}{4}]$
5. $3^{-x^2+4x} > 81$ [nessuna soluzione]
6. $5^{2(x-2)}(5^{2(x-1)})^{x+1} > 125^{x-1}$ $[x < -1;\ x > \frac{3}{2}]$
7. $5^{\frac{1}{x^2}} > 1$ $[x \neq 0]$
8. $3^{\frac{1}{x}}\ 3^{\frac{1}{x+1}} < 3$ $[x < -1;\ \frac{1-\sqrt{5}}{2} < x < 0;\ x > \frac{1+\sqrt{5}}{2}]$
9. $2^{\frac{x}{x+1}} > 1$ $[x < -1;\ x > 0]$
10. $\left(\left(\frac{1}{7}\right)^{x+1}\right)^x > \frac{1}{49}$ $[-2 < x < 1]$
11. $(3^{x-1})^{x+1} > 27$ $[x < -2;\ x > 2]$
12. $\left(\frac{1}{2}\right)^{x^2+1} > \left(\frac{1}{2}\right)^2$ $[-1 < x < 1]$
13. $\left(\frac{\sqrt{2}}{2}\right)^{9x} > \left(\frac{\sqrt{2}}{2}\right)^{\frac{1}{x}}$ $[x < -\frac{1}{3};\ 0 < x < \frac{1}{3}]$
14. $\log(x^2+1) > \log(2x+4)$ $[-2 < x < -1$ e $x > 3]$
15. $2\log_5 x \geq 3$ $[x \geq \sqrt{125}]$
16. $\log(2x-3) + \log(x-1) > 0$ $[\frac{3}{2} < x < 2]$
17. $\log x - \log 3 < \log(x+2)$ $[x > 0]$
18. $\log_3(x+1) + \log x_3 < \log_3(5x-3)$ $[1 < x < 3]$
19. $\log_{\frac{1}{2}}(x+1) + \log_{\frac{1}{2}}(6x-2) - \log_{\frac{1}{2}}(5x+1) > \log_{\frac{1}{2}} 4$ $[\frac{1}{3} < x < 3]$
20. $\frac{1}{3}\log(x+1) < 0$ $[-1 < x < 0]$
21. $\log_3 \log_3(4x+6) < 0$ $[-\frac{5}{4} < x < -\frac{3}{4}]$
22. $\mathrm{Log}(2x^2 - x) < 0$ $[-\frac{1}{2} < x < 0;\ \frac{1}{2} < x < 1]$
23. $\mathrm{Log}(x^2 - 13x - 14) > 2$ $[x < -6$ e $x > 19]$
24. $\log_{\frac{1}{2}} x \geq -1$ $[0 < x < 2]$