Logaritmi: sistemi di disequazioni

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risolvere i seguenti sistemi di disequazioni logaritmiche

1	$\begin{cases} log_2 x > 3 \\ log_4 x < 3 \end{cases}$	$8 < x < 64$
2	$\begin{cases} log_9 x \leq -\frac{1}{2} \\ log_{\frac{1}{10}} x > 1 \end{cases}$	$0 < x < \frac{1}{10}$
3	$\begin{cases} \frac{1}{2} log_{\frac{1}{5}} x < 2 \\ log_{0,25} x \geq 0 \end{cases}$	$\frac{1}{625} < x \leq 1$
4	$\begin{cases} ln\, x \leq 3 \\ ln(x-1) < 4 \end{cases}$	$1 < x \leq e^3$
5	$\begin{cases} ln\, x > -1 \\ \frac{1}{2} ln\, x < \sqrt{2} \end{cases}$	$e^{-1} < x < e^{2\sqrt{2}}$
6	$\begin{cases} log(x-1) + log(2x-3) > 0 \\ log_2 x + 3 \geq 0 \end{cases}$	$x > 2$
7	$\begin{cases} log_{\frac{1}{2}}(4x-3) > -1 \\ log_4 x < \frac{1}{2} \end{cases}$	$\frac{3}{4} < x < \frac{5}{4}$
8	$\begin{cases} log(2-x) > log(x+2) \\ log_3(2-5x) > 1 \end{cases}$	$-2 < x < -\frac{1}{5}$
9	$\begin{cases} log_{\frac{1}{2}}(x+5) \geq -3 \\ log_4(x^2-x) - log_4 6 < 0 \end{cases}$	$-2 < x < 0 \cup 1 < x < 3$

Logaritmi: sistemi di disequazioni

PASSED

10	$\begin{cases} log_4(2x-1) \leq 1 \\ log_3(x-2) > log_3(2x-x^2) \end{cases}$	$\emptyset$
11	$\begin{cases} ln\, 2x \leq 2\, ln\, x + 1 \\ \sqrt{2} > \frac{1}{2} ln\, x \end{cases}$	$\frac{2}{e} \leq x < e^{2\sqrt{2}}$
12	$\begin{cases} ln(x+3) > 0 \\ ln(x-5) < ln(2x) \end{cases}$	$x > 5$
13	$\begin{cases} log_{\sqrt{2}} x \geq 4 \\ 3\, log_2(x-2) < log_2(x-2) + log_2 4 \end{cases}$	$\emptyset$
14	$\begin{cases} log_{\frac{1}{4}}(2-x) > log_{\frac{1}{4}}(1-2x) \\ log_{\frac{1}{3}}(3x-5) < log_{\frac{1}{3}}(2x-1) \end{cases}$	$\emptyset$
15	$\begin{cases} log(x^2-3x+10) < 1 \\ log_5(x^2+6x+8) > log_5(x^2+4x-5) \end{cases}$	$1 < x < 3$
16	$\begin{cases} log_{12}(x-3) > 1 \\ log(log\, x) > 0 \end{cases}$	$x > 15$
17	$\begin{cases} log_4(2-x) - log_4 2 < log_4 3 + log_4(x-1) \\ ln(4-x) + ln\, x < ln(x+6-x^2) \end{cases}$	$\frac{8}{7} < x < 2$
18	$\begin{cases} log_2(4x+1) - log_2(5-x) > log_2(2x-1) \\ log_{\frac{3}{5}}(2-x^2) < log_{\frac{3}{5}}(1-2x) \end{cases}$	$\emptyset$
19	$\begin{cases} log_3(x+\sqrt{3}) > -log_3(x-\sqrt{3}) \\ log_2(x+1) < log_2 2 + log_2(x-1) \end{cases}$	$x > 3$

Logaritmi: sistemi di disequazioni

PASSED

20	$\begin{cases} log_{\frac{1}{2}}(8x-7) > log_{\frac{1}{2}}(x+4) + log_{\frac{1}{2}}(x-4) \\ log_4\left(\sqrt{x-1}-2\right) < 0 \end{cases}$	$9 < x < 10$
21	$\begin{cases} 1-(ln\,x)^2 \leq 0 \\ (ln\,x)^2 - 3\,ln\,x - 4 < 0 \end{cases}$	$e \leq x < e^4$
22	$\begin{cases} log_{\frac{1}{2}}^2 x + log_{\frac{1}{2}} x - 2 > 0 \\ 2^2 \geq log_2^2 x \end{cases}$	$\frac{1}{4} \leq x < \frac{1}{2}$
23	$\begin{cases} 2\,log_{\frac{1}{2}}(x-1) - log_{\frac{1}{2}}(x+5) < 1 \\ log_9(2x-1) < log_3(x) \end{cases}$	$x > 3$
24	$\begin{cases} log(x+5) > log(x+3) \\ ln(x^3+2x^2) > 0 \end{cases}$	$\frac{-1-\sqrt{5}}{2} < x < -1 \vee \frac{-1+\sqrt{5}}{2} < x < 0$
25	$\begin{cases} (log_2\,x)^2 - 2\,log_2\,x - 3 < 0 \\ log_2(x^2+6x+8) > log_2(x^2-3x) \end{cases}$	$3 < x < 8$
26	$\begin{cases} (log\,x)^2 - 4\,log\,x + 3 < 0 \\ 2\,log_{\frac{1}{10}}\,x \geq log_{\frac{1}{10}}\,192 + log_{\frac{1}{10}}\,3 - log_{\frac{1}{10}}\,4 \end{cases}$	$10 < x \leq 12$
27	$\begin{cases} log_{\frac{1}{4}}^2 x < \frac{1}{4} \\ 2 - log_{\frac{1}{3}}\,x > log_{\frac{1}{3}}^2 x \end{cases}$	$\frac{1}{2} < x < 2$
28	$\begin{cases} log_{\frac{1}{3}}(x+1) > -2 \\ \frac{x^3}{x+2} < 0 \end{cases}$	$-1 < x < 0$

Logaritmi: sistemi di disequazioni

PASSED

29	$\begin{cases} log_{0,5}\dfrac{x+1}{x-1} < log_{0,5}\, x \\ 0,5 - log_{0,5}\, x \geq 1 \end{cases}$	$\sqrt{2} \leq x < 1+\sqrt{2}$
30	$\begin{cases} log_{\frac{1}{3}}(6x-2) + log_{\frac{1}{3}}(x+1) - log_{\frac{1}{3}}(5x+1) > log_{\frac{1}{3}} 4 \\ log_4 4 > log_4\left(\dfrac{2-x}{x+3}\right) \end{cases}$	$\dfrac{1}{3} < x < 2$
31	$\begin{cases} log_{\frac{3}{2}}(4-3x) \geq 0 \\ log_2 \dfrac{x+3}{x} > 1 \end{cases}$	$0 < x \leq 1$
32	$\begin{cases} log_4(3x-2)^{\frac{1}{2}} < \dfrac{1}{2} + log_4^2(3x-2) \\ 2 + log_{\sqrt{2}}(3-x) > log_{\sqrt{2}}(2x+1) \end{cases}$	$\dfrac{2}{3} < x < \dfrac{5}{4}$
33	$\begin{cases} log_2^2(x-1) - log_2(x-1) - 2 \leq 0 \\ log_{\frac{2}{3}}(3x-7)^2 - log_{\frac{2}{3}}(3x-7) < log_{\frac{2}{3}}(11-2x)^2 - log_{\frac{2}{3}}(11-2x) \end{cases}$	$\dfrac{18}{5} < x \leq 5$
34	$\begin{cases} log_2(x^3+3x^2+4x) > 3 \\ log_{\frac{1}{5}}\sqrt{x+5} > log_{\frac{1}{5}}(x-1) \end{cases}$	$x > 4$
35	$\begin{cases} log_{\frac{1}{3}}(x^2-3x-4) < log_{\frac{1}{3}}(x^2-x-2) \\ log_{\frac{1}{20}}\left(\dfrac{x}{x+1}\right) < log_{\frac{1}{20}}\left(\dfrac{x+1}{x-1}\right) \end{cases}$	$x < -1$
36	$\begin{cases} log_{\frac{1}{3}} x > log_{\frac{1}{3}}\left(\dfrac{4+x}{2x+11}\right) \\ log_5(12-x) + log_5(7-x) > 2\, log_5(x+3) \end{cases}$	$0 < x < \dfrac{\sqrt{33}-5}{2}$
37	$\begin{cases} (log\, x)^4 > (log\, x)^5 \\ 2\, log_3 x - log_3(x+2) \leq 0 \end{cases}$	$0 < x < 1 \vee 1 < x \leq 2$

Logaritmi: sistemi di disequazioni

PASSED

38	$\begin{cases}[1+log_3^2(x-1)-2\,log_3(x-1)]\cdot log_4(x-1)>0\\ log_{\frac{1}{2}}\sqrt{x}>-log_2 x\end{cases}$	$2<x<4 \vee x>4$
39	$\begin{cases}\dfrac{log_2(3-x)+log_{\frac{1}{2}}x+4}{4+log_{\frac{1}{2}}x}\geq 1\\ log_2 x<log_2 x^2+log_{\frac{1}{2}}(2-x)^{\frac{1}{2}}\end{cases}$	$1<x<2$
40	$\begin{cases}\dfrac{log_2(x+2)}{log_{\frac{1}{3}}(x^2-1)}\leq 0\\ log_2{}^2 x-3log_2 x+2>0\end{cases}$	$\sqrt{2}<x<2 \quad \vee \quad x>4$
41	$\begin{cases}log_2^2(x+5)-6>log_2(x+5)\\ \dfrac{log_{\frac{1}{2}}x-4+2\,log_{\frac{1}{2}}x}{2-log_{\frac{1}{2}}x}+log_{\frac{1}{2}}x<0\end{cases}$	$x>3$
42	$\begin{cases}ln(x-1)-ln(2x+3)<ln(x+1)-ln(2x-3)\\ log_x\left(\sqrt{x+1}\right)>1\end{cases}$	$\frac{3}{2}<x<\frac{1+\sqrt{5}}{2}$
43	$\begin{cases}log\lvert x+3\rvert>log\lvert 3x-5\rvert\\ log_{\frac{1}{10}}(4^{x-1})<log_{\frac{1}{10}}(16)\end{cases}$	$3<x<4$
44	$\begin{cases}\dfrac{[log(x-1)]\cdot[log(x+1)]}{log[(x-1)(x+1)]}\leq 0\\ log_2\sqrt{x(2-x)}<0\end{cases}$	$\sqrt{2}<x<2$

Logaritmi: sistemi di disequazioni

PASSED

45	$\begin{cases} log_{\frac{1}{2}}^{4} x \geq log_{\frac{1}{2}}^{3} x \\ \dfrac{log_{\frac{1}{2}} x - \frac{1}{2}}{log_{\frac{1}{2}} x} \leq 0 \end{cases}$	$\emptyset$
46	$\begin{cases} \dfrac{3 - log_2 \lvert x \rvert + \lvert x \rvert + 1}{\lvert x \rvert + 1} \geq 1 \\ log_2[log_2(1-x)] - log_2 2 \geq 0 \end{cases}$	$-8 \leq x \leq -3$
47	$\begin{cases} ln(x+2) - ln(x-1) > ln[2(x-1)] \\ log(\lvert x-1 \rvert + 1) > 0 \\ log_{\frac{1}{11}}(4x+3) > -1 \end{cases}$	$1 < x < 2$
48	$\begin{cases} log_2(x^2-1) < 3 \\ x^4 + 6x^2 + 9 \geq 0 \\ \lvert x \rvert - 2 < 0 \end{cases}$	$-2 < x < -1 \vee 1 < x < 2$
49	$\begin{cases} (ln^2 x - 4)\left(2^{\sqrt{x}} - 2^x\right) \leq 0 \\ ln^4 x - 5ln^2 x \geq -4 \end{cases}$	$x = e^{-2} \vee e^{-1} \leq x \leq 1 \vee x \geq e^2$
50	$\begin{cases} \dfrac{(x-2)(x+2)}{log_2 x + 2} \leq 0 \\ log_2(2^{2x} - 2) < 1 \end{cases}$	$\frac{1}{2} < x < 1$