

## Disequazioni di vario tipo

1	$\frac{x^2 - 6x + 9}{x^2(x^2 + 4x + 4)} < 0$	<i>impossibile</i>
2	$\frac{3x^2 - 75}{x(x + 4)(x - 1)} \leq 0$	$x \leq -5 \vee -4 < x < 0 \vee 1 < x \leq 5$
3	$(2x - 5)^6 \geq 0$	$\forall x \in \mathbb{R}$
4	$(4 - x)^2(x + 5)(2x - 1) \geq 0$	$x \leq -5 \vee x \geq \frac{1}{2}$
5	$\frac{x^7(8 - x)^9}{(x + 2)^{11}} > 0$	$x < -2 \vee 0 < x < 8$
6	$\frac{14}{(2x - 12)^{10}} < 0$	<i>impossibile</i>
7	$-\frac{7}{(3x + 6)^4} < 0$	$x \neq -2$
8	$\frac{18}{(5x + 10)^7} < 0$	$x < -2$
9	$\frac{1}{(x - 2)^3} < 1$	$x < 2 \vee x > 3$
10	$\frac{x^3 - 3x^2}{(x - 1)^3} \geq 0$	$x < 1 \vee x \geq 3$
11	$(3x + 2)^2 \geq (3x - 2)^2$	$x \geq 0$
12	$\frac{x^2}{4} - x < \frac{21}{4}$	$-3 < x < 7$
13	$4x^2 + 21 - x > 0$	$\forall x \in \mathbb{R}$
14	$4x(x - 2) \leq 11 + (x - 4)^2$	$-3 \leq x \leq 3$
15	$\frac{x - 1}{x^2 + 2x + 2} < 0$	$x < 1$
16	$\frac{2}{x^2 + 1} > 1$	$-1 < x < 1$
17	$\frac{6x^2 - 7x + 3}{2x(3x - 1)} < 1$	$x > \frac{3}{5}$

18	$\frac{x}{\sqrt{2}} + \frac{\sqrt{2}}{\sqrt{2}-2} > x - \frac{1}{2-\sqrt{2}}$	$x < -(\sqrt{2} + 1)$
19	$\frac{(x+\sqrt{2})(\sqrt{2}-x)}{4} + \frac{x}{3} > \frac{2(x+1)-3(1-2x)}{6} - \frac{1}{4}x^2$	$x < \frac{2}{3}$
20	$\frac{1}{9}\left[x(x-1) - \frac{(2x-1)^2+3}{4}\right] + \frac{1}{6}\left(x + \frac{1}{3}\right) \leq \frac{1}{4}(x+1) + 2x - 1$	$x \geq \frac{1}{3}$
21	$\frac{1}{2}(x+\sqrt{3})^2 - \frac{3}{\sqrt{3}}\left(x + \frac{\sqrt{3}}{2} + 4\right) < \frac{2x^2 - 3\sqrt{6} + 6}{4} + x\sqrt{3}$	$x > -4$
22	$\frac{2}{5}(x-2)(x-4) < \frac{x+4}{2} - \frac{x^2}{4}$	$\frac{6}{13} < x < 4$
23	$\frac{-x(1-x)(1+3x)}{3} \leq x + \frac{x^2}{6} + \frac{11}{6}$	$-1 \leq x \leq 13$
24	$\frac{x(x+4)}{15} > 1 - \frac{x(x-7)}{30}$	$x < -\frac{10}{3} \vee x > 3$
25	$\frac{23 + (x-2)(x+1)}{3} - 5 < \frac{(x-1)(x+2)}{2} + \frac{x-x^2}{4}$	$4 < x < 9$
26	$\frac{(2x-3)(2x+1)}{4} + \frac{7x}{12} < \frac{(x-1)(x+2)}{6} - \frac{9}{4}$	<i>impossibile</i>
27	$\frac{2x}{2x^2+7x+5} > \frac{x}{x^2+6x+5}$	$x < -5 \vee -\frac{5}{2} < x < -1 \vee x > 0$
28	$\frac{3+2x}{2x-1} - \frac{10}{4x+2} > 1$	$x < -\frac{1}{2} \vee \frac{1}{2} < x < \frac{9}{2}$
29	$\frac{2-x}{1-x} + 1 \geq \frac{x^2-3}{x^2-2x+1}$	$x \leq 2 \vee x \geq 3 \wedge x \neq 1$
30	$1 - \frac{2x}{x-3} > \frac{2(2x+7)}{(x-3)^2}$	<i>impossibile</i>
31	$ 3-5x  > 3-x^2$	$x < 0 \vee x > 1$
32	$ x^2-1  + x^2 > x$	$x \neq 1$
33	$ x^2-4  +  3x  < 4$	<i>impossibile</i>
34	$ 5x-x^2  < 6$	$-1 < x < 2 \vee 3 < x < 6$

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35	$ x^2 - 2x - 3  - 2 > 0$	$x < 1 - \sqrt{6} \vee x > 1 + \sqrt{6} \vee$ $1 - \sqrt{2} < x < 1 + \sqrt{2}$
36	$\frac{1}{x^2 + 2} \geq 0$	$\mathcal{R}$
37	$ x^2 - 25  \leq 0$	$x = \pm 5$
38	$\frac{ x - 2 }{ 2x } > 0$	$x \neq 0, \neq x \neq 2$
39	$\frac{\sqrt{1 - x^2} - 3x + 1}{x - 1} > 0$	$\frac{3}{5} < x < 1$
40	$\frac{ x - 1  -  x^2 - 3  + 2x - 3}{\sqrt{x} - 3 + x} < 0$	$\frac{-3 + \sqrt{37}}{2} < x < \frac{7 - \sqrt{13}}{2} \cup x$ $> \frac{3 + \sqrt{5}}{2}$
41	$\frac{x^2 - 6x + 5}{\sqrt{x + 2} + 3x - 1} < 0$	$-2 \leq x < \frac{7 - \sqrt{85}}{18} \cup 1 < x < 5$
42	$\frac{5 - 2x + \sqrt{2x - 1}}{\sqrt{x^2 + 2} - \sqrt{x + 3}} > 0$	$\frac{1 + \sqrt{5}}{2} < x < \frac{11 + \sqrt{17}}{4}$
43	$\frac{\sqrt{9x^2 + 6x + 1} - 7}{x + 1 - \sqrt{x}} > 0$	$x > 2$
44	$\frac{\frac{ x - 2 }{ 1 - 3x } - 2}{\sqrt{1 - x^2} - 2 + x} > 0$	$-1 \leq x < 0 \cup \frac{4}{7} < x \leq 1$
45	$\frac{ x  + 1}{ 3 -  x  } > \frac{1}{3}$	$\mathcal{R} - \{0; \pm 3\}$
46	$\frac{\sqrt[3]{1 - x^3} + x}{\frac{ x - 3 }{ x + 2 } - 2} > 0$	$-7 < x < -\frac{1}{3} - \{-2\}$
47	$\frac{\sqrt{x^2 - 4} -  x  + \frac{3}{2}}{ x - 3  - x^2 +  x } > 0$	$-3 < x < -\frac{25}{12} \cup 2 \leq x < \frac{25}{12}$
48	$\frac{2}{x - 1} + \frac{1}{x + 1} > -2$	$x < -\frac{3 + \sqrt{17}}{4} \cup -1 < x < \frac{\sqrt{17} - 3}{4} \cup x$ $> 1$
49	$\frac{2x^2 - 3x + 1}{\sqrt{3x^2 - 1}} > 0$	$x < -\frac{\sqrt{3}}{3} \cup \frac{1}{2}, < x < \frac{\sqrt{3}}{3} \cup x > 1$