

risolvi le seguenti disequazioni algebriche

1	$\frac{2}{5}(x-2)(x-4) < \frac{x+4}{2} - \frac{x^2}{4}$	$\frac{6}{13} < x < 4$
2	$\frac{x(x+4)}{15} > 1 - \frac{x(x-7)}{30}$	$x < -\frac{10}{3} \vee x > 3$
3	$(3x+2)^2 \geq (3x-2)^2$	$x \geq 0$
4	$\frac{x^2}{4} - x < \frac{21}{4}$	$-3 < x < 7$
5	$4x^2 + 21 - x > 0$	\mathbb{R}
6	$4x(x-2) \leq 11 + (x-4)^2$	$-3 \leq x \leq 3$
7	$(2x-5)^6 \geq 0$	\mathbb{R}
8	$(4-x)^2(x+5)(2x-1) \geq 0$	$x \leq -5 \vee x \geq \frac{1}{2}$
9	$\frac{1}{x^2+2} \geq 0$	\mathbb{R}
10	$\frac{2}{x^2+1} > 1$	$-1 < x < 1$

11	$\frac{2}{x-1} + \frac{1}{x+1} > -2$	$x < \frac{-3-\sqrt{17}}{4} \vee -1 < x < \frac{-3+\sqrt{17}}{4} \vee x > 1$
12	$(3x^2 - 4) \left(1 + \frac{1}{x-1}\right) < 0$	$-\frac{2\sqrt{3}}{3} < x < 0 \vee 1 < x < \frac{2\sqrt{3}}{3}$
13	$1 + \frac{1}{3-2x} < \frac{1}{x+1}$	$-1 < x < \frac{2-\sqrt{6}}{2} \vee \frac{3}{2} < x < \frac{2+\sqrt{6}}{2}$
14	$\frac{x^2 - 6x + 9}{x^2(x^2 + 4x + 4)} < 0$	<i>impossibile</i>
15	$\frac{3x^2 - 75}{x(x+4)(x-1)} \leq 0$	$x \leq -5 \vee -4 < x < 0 \vee 1 < x \leq 5$
16	$\frac{x^7(8-x)^9}{(x+2)^{11}} > 0$	$x < -2 \vee 0 < x < 8$
17	$\frac{14}{(2x-12)^{10}} < 0$	<i>impossibile</i>
18	$-\frac{7}{(3x+6)^4} < 0$	$x \neq -2$
19	$\frac{18}{(5x+10)^7} < 0$	$x < -2$
20	$\frac{1}{(x-2)^3} < 1$	$x < 2 \vee x > 3$

21	$\frac{x^3 - 3x^2}{(x-1)^3} \geq 0$	$x < 1 \vee x \geq 3$
22	$\frac{x-1}{x^2+2x+2} < 0$	$x < 1$
23	$\frac{4x^2 - 3x - 1}{x-2} < 1$	$x < \frac{1}{2} \vee \frac{1}{2} < x < 2$
24	$\frac{6x^2 - 7x + 3}{2x(3x-1)} < 1$	$0 < x < \frac{1}{2} \vee x > \frac{3}{5}$
25	$\frac{x}{\sqrt{2}} + \frac{\sqrt{2}}{\sqrt{2}-2} > x - \frac{1}{2-\sqrt{2}}$	$x < -1 - \sqrt{2}$
26	$\frac{(x+\sqrt{2})(\sqrt{2}-x)}{4} + \frac{x}{3} > \frac{2(x+1) - 3(1-2x)}{6} - \frac{1}{4}x^2$	$x < \frac{2}{3}$
27	$\frac{1}{9} \left[x(x-1) - \frac{(2x-1)^2 + 3}{4} \right] + \frac{1}{6} \left(x + \frac{1}{3} \right) \leq \frac{1}{4}(x+1) + 2x - 1$	$x \geq \frac{11}{25}$
28	$\frac{23 + (x-2)(x+1)}{3} - 5 < \frac{(x-1)(x+2)}{2} + \frac{x-x^2}{4}$	$4 < x < 9$
29	$\frac{(2x-3)(2x+1)}{4} + \frac{7x}{12} < \frac{(x-1)(x+2)}{6} - \frac{9}{4}$	<i>impossibile</i>
30	$\frac{2x}{2x^2+7x+5} > \frac{x}{x^2+6x+5}$	$x < -5 \vee -\frac{5}{2} < x < -1 \vee x > 0$


31	$\frac{3 + 2x}{2x - 1} - \frac{10}{4x + 2} > 1$	$x < -\frac{1}{2} \vee \frac{1}{2} < x < \frac{9}{2}$
32	$\frac{2 - x}{1 - x} + 1 \geq \frac{x^2 - 3}{x^2 - 2x + 1}$	$x < 1 \vee 1 < x \leq 2 \vee x \geq 3$
33	$1 - \frac{2x}{x - 3} > \frac{2(2x + 7)}{(x - 3)^2}$	<i>impossibile</i>
diseguazioni in valore assoluto		
34	$ 3 - 5x > 3 - x^2$	$x < 0 \vee x > 1$
35	$ x^2 - 1 + x^2 > x$	$x \neq 1$
36	$ x^2 - 4 + 3x < 4$	<i>impossibile</i>
37	$ 5x - x^2 < 6$	$-1 < x < 2 \vee 3 < x < 6$
38	$ x^2 - 2x - 3 - 2 > 0$	$x < 1 - \sqrt{6} \vee 1 - \sqrt{2} < x < 1 + \sqrt{2} \vee x > 1 + \sqrt{6}$
39	$ x^2 - 25 \leq 0$	$x = \pm 5$

40	$\frac{ x-2 }{ 2x } > 0$	$x \neq 0 \wedge x \neq 2$
41	$\frac{ x +1 }{ 3- x } > \frac{1}{3}$	$x \neq -3 \wedge x \neq 0 \wedge x \neq 3$
diseguazioni irrazionali		
42	$\frac{\sqrt{1-x^2}-3x+1}{x-1} > 0$	$\frac{3}{5} < x < 1$
43	$\frac{2x^2-3x+1}{\sqrt{3x^2-1}} > 0$	$x < -\frac{\sqrt{3}}{3} \vee \frac{1}{2}, < x < \frac{\sqrt{3}}{3} \vee x > 1$
44	$\sqrt[3]{\frac{2x+7}{x+1}} > 3$	$-1 < x < -\frac{4}{5}$
45	$\frac{x^2-6x+5}{\sqrt{x+2}+3x-1} < 0$	$-2 \leq x < \frac{7-\sqrt{85}}{18} \vee 1 < x < 5$
46	$\frac{5-2x+\sqrt{2x-1}}{\sqrt{x^2+2}-\sqrt{x+3}} > 0$	$\frac{1+\sqrt{5}}{2} < x < \frac{11+\sqrt{17}}{4}$
47	$\frac{\sqrt{9x^2+6x+1}-7}{x+1-\sqrt{x}} > 0$	$x > 2$

esercizi più impegnativi

48	$\left \frac{2 - \sqrt{x}}{1 - 2x } \right > 1$	$0 \leq x < \frac{1}{2} \vee \frac{1}{2} < x < 1$
49	$\sqrt{\frac{3 - 3x - 1 }{1 + x}} > 1$	$x < -1 \vee -\frac{1}{2} < x < \frac{3}{4}$
50	$1 + \frac{ x }{\sqrt{x}} > 0$	$x > 0$
51	$\sqrt{1 - 4x^2} > \sqrt{3 - x }$	<i>impossibile</i>
52	$\frac{(x - 3)(\sqrt{x^2 - 2x + 1})}{3 - 2x^2} \leq 0$	$x \leq -3 \vee -\frac{\sqrt{6}}{2} < x \leq 0 \vee x \geq 3$
53	$\frac{\sqrt[3]{1 - x^3} + x}{\left \frac{x - 3}{x + 2} \right - 2} > 0$	$-7 < x < -2 \vee -2 < x - \frac{1}{3}$
54	$\frac{ x - 1 + 2}{\sqrt{x^2 - 1} + 3x} \leq 0$	$x \leq -1$
55	$\frac{\left \frac{x - 2}{1 - 3x} \right - 2}{\sqrt{1 - x^2} - 2 + x} > 0$	$-1 \leq x < 0 \vee \frac{4}{7} < x \leq 1$

56	$\frac{ x-1 - x^2-3 + 2x-3}{\sqrt{x}-3+x} < 0$	$\frac{-3+\sqrt{37}}{2} < x < \frac{7-\sqrt{13}}{2} \vee \frac{3+\sqrt{5}}{2} < x < \frac{7+\sqrt{13}}{2} \vee x > \frac{7+\sqrt{13}}{2}$
57	$\frac{\sqrt[3]{x^2-5x+5}+1}{\sqrt{ x -2}+1} \geq 0$	$x \leq -2 \vee x \geq 3 \vee x = 2$
58	$\frac{ x-2x^2 - 2 x+2 }{\sqrt[3]{3x}-2} < 0$	$x < \frac{3-\sqrt{41}}{4} \vee \frac{3+\sqrt{41}}{4} < x < \frac{8}{3}$
59	$\frac{\sqrt{x^2-4} - x + \frac{3}{2}}{ x-3 - x^2 + x } > 0$	$-3 < x < -\frac{25}{12} \vee 2 \leq x < \frac{25}{12}$
60	$\sqrt{2x^2-4x} - \frac{ x+1 }{2} \geq 0$	$x \leq \frac{9-2\sqrt{22}}{7} \vee x \geq \frac{9+2\sqrt{22}}{7}$
61	$\frac{(3x^2-2)(2x^2-1 +x)}{3\sqrt{x-1}-2} > 0$	$x > \frac{13}{9}$
62	$\frac{2\sqrt{ x-1 -x}-4x}{ x -1 } > 0$	$x < -1 \vee -1 < x < \frac{-1+\sqrt{5}}{4}$
63	$\left \frac{x- x }{\sqrt{x}+2} - 1 \right > 1$	<i>impossibile</i>

64	$\sqrt[3]{\frac{ 3 - 2x - x}{1 + 3\sqrt{x}}} \leq 0$	$1 \leq x \leq 3$
 65	$\frac{2x^2 - 1}{ x - 1} > \sqrt{x} + 1$	$x > 1$