

Risolvi le seguenti disequazioni di grado superiore al secondo di vario tipo

1	$x^4 - x^2 > 0$	$x < -1 \vee x > 1$
2	$x^2(x^2 - 1) \geq 0$	$x \leq -1 \vee x \geq 1 \vee x = 0$
3	$x^4 - 16a^4 \geq 0$	$x \leq -2a \vee x \geq 2a$
4	$x^4 + 4 < 0$	$\emptyset$
5	$2x^4 + \sqrt{3} > 0$	$R$
6	$x^4 + 3 \geq 0$	$R$
7	$x^3 + 1 \leq 0$	$x \leq -1$
8	$x^6 + 1 \geq 0$	$R$
9	$x^4 - 81 < 0$	$-3 < x < 3$
10	$4x^8 + 1 \geq 0$	$R$
11	$x^2(x^2 - 9) > 0$	$x < -3 \vee x > 3$
12	$x^2(3x^2 - 4) \leq 0$	$-\frac{2}{3}\sqrt{3} \leq x \leq \frac{2}{3}\sqrt{3}$
13	$(2x^2 - 1)(x^2 - 9) > 0$	$x < -3 \vee -\frac{\sqrt{2}}{2} < x < \frac{\sqrt{2}}{2} \vee x > 3$
14	$x^2 - x^4 > 0$	$-1 < x < 0 \vee 0 < x < 1$
15	$x^3 - 5x^2 + 6x < 0$	$x < 0 \vee 2 < x < 3$
16	$x^3 - 2x^2 - x + 2 \leq 0$	$x \leq -1 \vee 1 \leq x \leq 2$
17	$2x^3 - 11x^2 + 17x - 6 \geq 0$	$\frac{1}{2} \leq x \leq 2 \vee x \geq 3$
18	$x^3 + x^2 - 3x + 1 > 0$	$-\sqrt{2} - 1 < x < \sqrt{2} - 1 \vee x > 1$
19	$2x^4 - 7x^3 + 4x^2 + 7x - 6 < 0$	$-1 < x < 1 \vee \frac{3}{2} < x < 2$

20	$x^4 + x^2 + 1 > 0$	$R$
21	$x^4 - 5x^2 \geq 0$	$x = 0 \vee x \leq -\sqrt{5} \vee x \geq \sqrt{5}$
22	$(x^2 - 3)(x - 2)(x^2 + 1) > 0$	$-\sqrt{3} < x < \sqrt{3} \vee x > 2$
23	$x^3 + x^2 - 10x + 8 < 0$	$x < -4 \vee 1 < x < 2$
24	$4x^6 + 8x^3 + 4 > 0$	$R - \{-1\}$
25	$2x^8 + x^4 - 3 > 0$	$x < -1 \vee x > 1$
26	$2x^5 - 2x^4 - x^3 + x^2 - 21x + 21 < 0$	$x < -\sqrt{\frac{7}{2}} \vee 1 < x < \sqrt{\frac{7}{2}}$
27	$x(x^2 - 11) < 7x(1 - x)$	$x < -9 \vee 0 < x < 2$
28	$(x^2 - 3x + 4)(x + 5)(x^2 - 2) > 0$	$-5 < x < -\sqrt{2} \vee x > \sqrt{2}$
29	$x^5 + 2x^4 - 21x^3 - 24x^2 + 38x + 40 > 0$	$-5 < x < -\sqrt{2} \vee -1 < x < \sqrt{2} \vee x > 4$
30	$x^4 - 10x^3 + 28x^2 - 15x - 18 > 0$	$x < \frac{5 - \sqrt{37}}{2} \vee 2 < x < 3 \vee x > \frac{5 + \sqrt{37}}{2}$
31	$3x^4 - 7x^3 - 13x^2 + 35x - 10 < 0$	$-\sqrt{5} < x < \frac{1}{3} \vee 2 < x < \sqrt{5}$
32	$x^3 - 2x - 21 < 0$	$x < 3$
33	$3x^4 - x^3 + 3x - 1 < 0$	$-1 < x < \frac{1}{3}$
34	$x^4 - x^3 + x^2 > 0$	$R - \{0\}$
35	$x^6 - 5x^5 + 6x^4 + 4x^3 - 24x^2 + 16x + 32 \leq 0$	$1 - \sqrt{5} \leq x \leq -1 \vee 2 \leq x \leq 1 + \sqrt{5}$
36	$10x^3 + 5x^2 - 2x - 1 > 0$	$-\frac{1}{2} < x < -\frac{\sqrt{5}}{5} \vee x > \frac{\sqrt{5}}{5}$

37	$8x^3 + 2x^2 - 24x - 6 > 0$	$-\sqrt{3} < x < -\frac{1}{4} \vee x > \sqrt{3}$
38	$x^4 - x^3 - x^2 \leq 0$	$\frac{1 - \sqrt{5}}{2} \leq x \leq \frac{1 + \sqrt{5}}{2}$
38	$x^3 - x^2 - 2x + 2 > 0$	$-\sqrt{2} < x < 1 \vee x > \sqrt{2}$
40	$16x^4 - 1 \geq 0$	$x \leq -\frac{1}{2} \vee x \geq \frac{1}{2}$
41	$27x^6 + 5 > 0$	$R$
42	$4x^4 - 2x^2 - 2 < 0$	$-1 < x < 1$
43	$x^5 - 32 \leq 0$	$x \leq 2$
44	$x^6 + 1 < 0$	$\emptyset$
45	$8x^4 - 11x^2 + 3 > 0$	$x < -1 \vee -\sqrt{\frac{3}{8}} < x < \sqrt{\frac{3}{8}} \vee x > 1$
46	$x^4 - 5x^2 - 6 > 0$	$x < -\sqrt{6} \vee x > \sqrt{6}$
47	$x^4 - 5x^2 + 4 \geq 0$	$x \leq -2 \vee -1 \leq x \leq 1 \vee x \geq 2$
48	$(x^4 - 25x^2 + 144)(x^2 - 3) < 0$	$-4 < x < -3 \vee -\sqrt{3} < x < \sqrt{3} \vee 3 < x < 4$
49	$x^4 - 8x^2 + 16 > 0$	$R - \{-2; 2\}$
50	$x^6 - 7x^3 - 8 < 0$	$-1 < x < 2$
51	$2x^8 - 5x^4 + 2 > 0$	$x < \sqrt[4]{2} \vee -\frac{\sqrt[4]{8}}{2} < x < \frac{\sqrt[4]{8}}{2} \vee x > \sqrt[4]{2}$
52	$(x^2 - 1)^6 + 3(x^2 - 1)^3 - 40 \leq 0$	$-\sqrt{1 + \sqrt[3]{5}} \leq x \leq \sqrt{1 + \sqrt[3]{5}}$
53	$x^4 - 7x^2 + 18 > 0$	$R$

54	$x^5 - 2x^4 + 5x^3 + 5x^2 - 2x + 1 > 0$	$x > -1$
55	$3x^3 - 12x^2 - 12x + 3 > 0$	$-1 < x < \frac{5 - \sqrt{21}}{2} \vee x > \frac{5 + \sqrt{21}}{2}$
56	$-5x^3 - 38x^2 - 5x - 38 < 0$	$x > -\frac{38}{5}$
57	$4x^3 - 13x^2 - 13x + 4 \geq 0$	$-1 \leq x \leq \frac{1}{4} \vee x \geq 4$
58	$(x^3 - 8)(x - 3)(x^4 - 2) > 0$	$x < -\sqrt[4]{2} \vee \sqrt[4]{2} < x < 2 \vee x > 3$
59	$(x^3 + x^2 + x + 1)(x^3 - 27) < 0$	$-1 < x < 3$
60	$x^6 - 5x^3 + 6 > 0$	$x < \sqrt[3]{2} \vee x > \sqrt[3]{3}$
61	$[x(x + 1) - 3x]x(x + 2) < 4 - x^2$	$-2 < x < 2$
62	$x^5 - 2x^4 + x^3 - 2x^2 - 2x + 4 \leq 0$	$x \leq -1 \vee 1 \leq x \leq 2$
63	$8x^3 - (x^2 + 7) \geq 0$	$x \geq 1$
64	$x^6 + 2x^3 - 15 < 0$	$-\sqrt[3]{5} < x < \sqrt[3]{3}$
65	$2x^3 - 5x^2 + 8x - 20 < 0$	$x < \frac{5}{2}$
66	$2x(x^2 + 1) + x^3(x - 1) - (3x + 1) > 0$	$x < -1 \vee x > 1$
67	$5x^2 + 7x^4 \leq 0$	$x = 0$
68	$x^4 - 5x^3 - x + 5 < 0$	$1 < x < 5$
69	$x^4 - 4 \leq 0$	$-\sqrt{2} \leq x \leq \sqrt{2}$
70	$x^3(x^2 - 1) - 2x(x^2 + 14) < 0$	$x < -\sqrt{7} \vee 0 < x < \sqrt{7}$

71	$x^3 + 4x^2 + x < 6$	$x < -3 \vee -2 < x < 1$
72	$x^3 + 2x^2 - 9x - 18 < 0$	$x < -3 \vee -2 < x < 3$
73	$(x^2 - 3x - 4)(x^2 - 25) < 0$	$-5 < x < -1 \vee 4 < x < 5$
74	$x^3 - 8 \geq 0$	$x \geq 2$
75	$(x^2 - 4)(x + 1) > 0$	$-2 < x < -1 \vee x > 2$
76	$(x - 2)(2x - 1)(x + 3) > 0$	$-3 < x < \frac{1}{2} \vee x > 2$
77	$x^3 + x^2 - 4x - 4 < 0$	$x < -2 \vee -1 < x < 2$
78	$2x^4 - 5x^3 + 5x - 2 < 0$	$-1 < x < \frac{1}{2} \vee 1 < x < 2$
79	$x^3 > 6x^2 - 8x$	$0 < x < 2 \vee x > 4$
80	$x^3 > x^2 + 2x$	$-1 < x < 0 \vee x > 2$
81	$2x^3 + 3x^2 - 2x - 3 > 0$	$-\frac{3}{2} < x < -1 \vee x > 1$
82	$5x^3 - 2x^2 - 5x + 2 < 0$	$x < -1 \vee \frac{2}{5} < x < 1$
83	$x(x - 1)(x + 2) > 0$	$-2 < x < 0 \vee x > 1$
84	$x(x - 1)^2(x + 2) < 0$	$-2 < x < 0$
85	$(x - 1)(x^2 + 4x)(5 + 2x) < 0$	$-4 < x < -\frac{5}{2} \vee 0 < x < 1$
86	$x^4 - 7x^2 + 6 \geq 0$	$x \leq -\sqrt{6} \vee -1 \leq x \leq 1 \vee x \geq \sqrt{6}$
87	$x^4 - 26x^2 + 25 > 0$	$x < -5 \vee -1 < x < 1 \vee x > 5$

88	$9x^4 + 46x^2 + 5 < 0$	$\emptyset$
89	$x^4 - 3x^3 + 2x^2 \leq 0$	$x = 0 \vee 1 \leq x \leq 2$
90	$\frac{x^3(x+1)^2}{x+3} \geq 0$	$x < -3 \vee x \geq 0 \vee x = -1$
91	$\frac{x^3(x-1)^3}{x+3} \geq 0$	$-3 < x \leq 0 \vee x \geq 1$
92	$\frac{x^2 + 4x + 4}{12x - 4 - 9x^2} \geq 0$	$x = -2$
93	$\frac{x^2 - 4}{x^2 + 5x - 14} < 0$	$-7 < x < -2$
94	$\frac{x-1}{x+1} \geq \frac{x+1}{x-1}$	$x < -1 \vee 0 \leq x < 1$
95	$\frac{1}{x} < \frac{x-1}{x^2+x+1}$	$-\frac{1}{2} < x < 0$
96	$\frac{x^3 + x^2 + 1}{x^3 - 1} \leq 1$	$x < 1$
97	$\frac{1}{x-1} \geq \frac{x+1}{x^2-1}$	$R - \{-1, +1\}$
98	$\frac{x+3}{x-2} < \frac{x-2}{x+3}$	$x < -3 \vee -\frac{1}{2} < x < 2$