

risolvi le seguenti equazioni nell'insieme dei numeri reali

equazioni monomie

1	$x^2 = 0$	$3x^2 = 0$
2	$\frac{5}{7}x^2 = 0$	$\frac{2}{3}x^2 = 0$
3	$4x^2 = 0$	$10x^2 = 0$

equazioni pure

4	$x^2 - 1 = 0$	$x_1 = -1, \quad x_2 = 1$
5	$x^2 - 4 = 0$	$x_1 = -2, \quad x_2 = 2$
6	$3x^2 - 27 = 0$	$x_1 = -3, \quad x_2 = 3$
7	$x^2 + 1 = 0$	$\nexists x \in R$
8	$9x^2 - 4 = 0$	$x_1 = -\frac{2}{3}, \quad x_2 = \frac{2}{3}$
9	$x^2 + 9 = 0$	$\nexists x \in R$
10	$3x^2 - 1 = 0$	$x_1 = -\frac{\sqrt{3}}{3}, \quad x_2 = \frac{\sqrt{3}}{3}$
11	$125x^2 - 5 = 0$	$x_1 = -\frac{1}{5}, \quad x_2 = \frac{1}{5}$
12	$5x^2 + 125 = 0$	$\nexists x \in R$
13	$4 + 124x^2 = 0$	$\nexists x \in R$
14	$7 + 49x^2 = 0$	$\nexists x \in R$

15	$5x^2 = 1$	$x_1 = -\frac{\sqrt{5}}{5}, x_2 = \frac{\sqrt{5}}{5}$
16	$7 - 49x^2 = 0$	$x_1 = -\frac{\sqrt{7}}{7}, x_2 = \frac{\sqrt{7}}{7}$
17	$7 = -3x^2$	$\nexists x \in \mathbb{R}$
18	$\frac{7}{8}x^2 - 1 = 0$	$x_1 = -\frac{2\sqrt{14}}{7}, x_2 = \frac{2\sqrt{14}}{7}$
19	$\sqrt{3}x^2 + 1 = 0$	$\nexists x \in \mathbb{R}$
20	$x^2 - \sqrt{2} = 0$	$x_1 = -\sqrt[4]{2}, x_2 = \sqrt[4]{2}$
21	$\frac{4}{5}x^2 - 49 = 0$	$x_1 = -\frac{7\sqrt{5}}{2}, x_2 = \frac{7\sqrt{5}}{2}$

equazioni spurie

22	$x^2 - x = 0$	$x_1 = 0, x_2 = 1$
23	$x^2 + 4x = 0$	$x_1 = -4, x_2 = 0$
24	$5x = 5x^2$	$x_1 = 0, x_2 = 1$
25	$2x + x^2 = 0$	$x_1 = -2, x_2 = 0$
26	$5x^2 + 10x = 0$	$x_1 = -2, x_2 = 0$
27	$x - 2x^2 = 0$	$x_1 = 0, x_2 = \frac{1}{2}$
28	$5x - 3x^2 = 0$	$x_1 = 0, x_2 = \frac{5}{3}$
29	$3x^2 + 5x = 0$	$x_1 = -\frac{5}{3}, x_2 = 0$

30	$\frac{7}{9}x^2 - x = 0$	$x_1 = 0, \quad x_2 = \frac{9}{7}$
31	$x^2 + \frac{2}{3}x = 0$	$x_1 = -\frac{2}{3}, \quad x_2 = 0$
32	$\frac{81}{4}x^2 - \frac{9}{2}x = 0$	$x_1 = 0, \quad x_2 = \frac{2}{9}$
33	$\frac{3}{5}x^2 + x = 0$	$x_1 = -\frac{5}{3}, \quad x_2 = 0$
34	$\frac{9}{4}x^2 - \frac{2}{3}x = 0$	$x_1 = 0, \quad x_2 = \frac{8}{27}$
35	$\frac{25}{49}x^2 + x = 0$	$x_1 = -\frac{49}{25}, \quad x_2 = 0$
36	$x^2 = \sqrt{5}x$	$x_1 = 0, \quad x_2 = \sqrt{5}$
37	$\sqrt{2}x^2 = -2x$	$x_1 = -\sqrt{2}, \quad x_2 = 0$

equazioni complete intere

38	$x^2 - 7x + 10 = 0$	$x_1 = 2, x_2 = 5$
39	$x^2 + 5x + 6 = 0$	$x_1 = -3, \quad x_2 = -2$
40	$x^2 + 2x - 3 = 0$	$x_1 = -3, \quad x_2 = 1$
41	$2x^2 + 7x + 3 = 0$	$x_1 = -3, \quad x_2 = -\frac{1}{2}$
42	$x^2 + x + 12 = 0$	$\nexists x \in \mathbb{R}$
43	$5x^2 - 2x - 16 = 0$	$x_1 = -\frac{8}{5}, \quad x_2 = 2$

44	$2x^2 + 5x - 12 = 0$	$x_1 = -4, \quad x_2 = \frac{3}{2}$
45	$25x^2 - 20x + 4 = 0$	$x_1 = x_2 = \frac{2}{5}$
46	$x^2 - 5x + 6 = 0$	$x_1 = 2, \quad x_2 = 3$
47	$x^2 + x - 12 = 0$	$x_1 = -4, \quad x_2 = 3$
48	$x^2 + 7x - 8 = 0$	$x_1 = -8, \quad x_2 = 1$
49	$9x^2 - 6x + 1 = 0$	$x_1 = x_2 = \frac{1}{3}$
50	$x^2 - x = 20$	$x_1 = -4, \quad x_2 = 5$
51	$3x^2 + 5x + 3 = 0$	$\nexists x \in R$
52	$2x^2 = 3x + 2$	$x_1 = -\frac{1}{2}, \quad x_2 = 2$
53	$x^2 = x + 2$	$x_1 = -1, \quad x_2 = 2$
54	$10 = 3x^2 + x$	$x_1 = -2, \quad x_2 = \frac{5}{3}$
55	$x^2 - 3\sqrt{2}x + 4 = 0$	$x_1 = \sqrt{2}, \quad x_2 = 2\sqrt{2}$
56	$3x^2 - x + 1 = 0$	$\nexists x \in R$
57	$4x^2 - 4x - 1 = 0$	$x_1 = \frac{1 - \sqrt{2}}{2}, \quad x_2 = \frac{1 + \sqrt{2}}{2}$

58	$x^2 + 4x + 1 = 0$	$x_1 = -2 - \sqrt{3}, \quad x_2 = -2 + \sqrt{3}$
59	$x^2 = -x - 2$	$\nexists x \in R$
60	$x^2 - (\sqrt{3} + \sqrt{2})x + \sqrt{6} = 0$	$x_1 = \sqrt{2}, \quad x_2 = \sqrt{3}$
61	$(2x + 1)^2 - (x - 3)^2 = 0$	$x_1 = -4, \quad x_2 = \frac{2}{3}$
62	$x = (x + 2)^2$	$\nexists x \in R$
63	$x^2 + (\sqrt{2} - \sqrt{3})x - \sqrt{6} = 0$	$x_1 = -\sqrt{2}, \quad x_2 = \sqrt{3}$
64	$\frac{x^2}{3} + 3x + 3 = 0$	$x_1 = \frac{-9 - 3\sqrt{5}}{2}, \quad x_2 = \frac{-9 + 3\sqrt{5}}{2}$
65	$x^2 - \frac{1}{2} + \frac{1}{6}x = -\frac{1}{4}$	$x_1 = \frac{-1 - \sqrt{37}}{12}, \quad x_2 = \frac{-1 + \sqrt{37}}{12}$
66	$x^2 + 16 = 6\sqrt{2}x$	$x_1 = 2\sqrt{2}, \quad x_2 = 4\sqrt{2}$
67	$4\sqrt{5}x - 1 = 4x^2$	$x_1 = \frac{\sqrt{5} - 2}{2}, \quad x_2 = \frac{\sqrt{5} + 2}{2}$
68	$x^2 - 4\sqrt{3}x + 12 = 0$	$x_1 = x_2 = 2\sqrt{3}$
69	$x + \sqrt{5} = (2x - \sqrt{5})(x + \sqrt{5})$	$x_1 = -\sqrt{5}, \quad x_2 = \frac{1 + \sqrt{5}}{2}$
70	$\left(x + \frac{1}{2}\right)^2 = \left(\frac{3}{2} - 2x\right)^2$	$x_1 = \frac{1}{3}, \quad x_2 = 2$
71	$x(x + \sqrt{7}) = 14$	$x_1 = -2\sqrt{7}, \quad x_2 = \sqrt{7}$

72	$\frac{1}{3}(3-x) + \frac{x^2-1}{6} - \frac{2}{3} = 0$	$x_1 = x_2 = 1$
73	$2\sqrt{3}x = x^2 + 2$	$x_1 = \sqrt{3} - 1, \quad x_2 = \sqrt{3} + 1$

equazioni di secondo grado frazionarie

74	$\frac{2}{x} = \frac{x}{2}$	$x_1 = -2, \quad x_2 = 2$
75	$x = \frac{1}{x}$	$x_1 = -1, \quad x_2 = 1$
76	$x - 1 = \frac{9}{x - 1}$	$x_1 = -2, \quad x_2 = 4$
77	$-\frac{2}{x+3} = \frac{1}{x^2}$	$\nexists x \in \mathbb{R}$
78	$\frac{1}{x^2} = \frac{2}{x+3}$	$x_1 = -1, \quad x_2 = \frac{3}{2}$
79	$\frac{2}{x^2+1} = \frac{1-x^2}{x^2+1}$	$\nexists x \in \mathbb{R}$
80	$\frac{3}{x-1} = \frac{2x}{x+1}$	$x_1 = -\frac{1}{2}, \quad x_2 = 3$
81	$\frac{3}{x(x-2)} = \frac{4x-2}{x}$	$x_1 = \frac{5-\sqrt{21}}{4}, \quad x_2 = \frac{5+\sqrt{21}}{4}$
82	$\frac{4}{3} + \frac{1}{x-1} = \frac{1+x}{x-1} - \frac{x}{x+1}$	$x_1 = -\frac{1}{2}, \quad x_2 = 2$
83	$\frac{\sqrt{3}}{x} = \frac{x}{\sqrt{27}}$	$x_1 = -3, \quad x_2 = 3$
84	$\frac{1}{x^2} = \frac{2-x}{x}$	$x_1 = x_2 = 1$
85	$\frac{x+3}{x} - \frac{1}{x^2} = -\frac{1}{x}$	$x_1 = -2 - \sqrt{5}, \quad x_2 = -2 + \sqrt{5}$

86	$\frac{3x}{x+1} + \frac{x^2}{2x^2+x-1} = \frac{2x}{1-2x}$	$x_1 = 0, \quad x_2 = \frac{1}{9}$
87	$\frac{11-3x}{4(x-1)} = \frac{1+x}{x^2-1} - \frac{1}{x+1}$	$x_1 = -\frac{1}{3}, \quad x_2 = 3$
88	$\frac{1}{x^2-1} + \frac{x+1}{x-1} = \frac{1-x}{x+1}$	$\nexists x \in \mathbb{R}$
89	$\frac{2}{x+1} + \frac{x}{1-x} = \frac{8}{1-x^2}$	$x_1 = -2, \quad x_2 = 3$
90	$\frac{3x+2}{x^2+2x} + \frac{1}{x} = \frac{x+1}{x+2}$	$x_1 = -1, \quad x_2 = 4$
91	$\frac{2}{x} - \frac{2x}{x+1} = \frac{2-x}{x}$	$x_1 = 1, \quad x_2 = 0 \text{ non accettabile}$
92	$\frac{x^2-11}{x^2+2x-3} + \frac{x}{x-1} = \frac{x+1}{x+3}$	$x_1 = -5, \quad x_2 = 2$

equazioni di secondo grado di vario tipo

93	$4x(2-x) + (x-2) = -11$	$x_1 = -\frac{3}{4}, \quad x_2 = 3$
94	$(2x-1)^2 + 4(x-2)(x+2) = -18$	$\nexists x \in \mathbb{R}$
95	$x(x+\sqrt{7}) = 14$	$x_1 = -2\sqrt{7}, \quad x_2 = \sqrt{7}$
96	$\frac{1}{2}(x-1) + x = (x+1)(x-2)$	$x_1 = -\frac{1}{2}, \quad x_2 = 3$
97	$4 + (1+2x)^2 = 0$	$\nexists x \in \mathbb{R}$
98	$(\sqrt{3}-2x)^2 = (x+\sqrt{3})^2$	$x_1 = 0, \quad x_2 = 2\sqrt{3}$
99	$\frac{1}{3}(3-x) + \frac{x^2-1}{6} - \frac{2}{3} = 0$	$x_1 = x_2 = 1$

100	$\sqrt{2}(2x + 1) + (x - \sqrt{2})^2 = x + 4$	$x_1 = 1 - \sqrt{2}, \quad x_2 = \sqrt{2}$
101	$2\sqrt{3}x = x^2 + 2$	$x_1 = \sqrt{3} - 1, \quad x_2 = \sqrt{3} + 1$
102	$\frac{1}{x+1} + \frac{1}{12} = \frac{1}{1-x}$	$x_1 = -12 - \sqrt{145}, \quad x_2 = -12 + \sqrt{145}$
103	$\frac{1}{x+\sqrt{3}} + \frac{1}{x-\sqrt{3}} = 3$	$x_1 = \frac{1-2\sqrt{7}}{3}, \quad x_2 = \frac{1+2\sqrt{7}}{3}$
104	$x + 2 = \frac{6}{x+2} + 1$	$x_1 = -4, \quad x_2 = 1$
105	$\frac{x-5}{8} - \frac{x}{5} = \frac{5}{x-10}$	$x_1 = -\frac{10}{3}, \quad x_2 = 5$
106	$\frac{1}{x(2-x)} - \frac{4-x}{x(x+2)} = \frac{2}{4-x^2}$	$x_1 = 2 \text{ non accettabile}, \quad x_2 = 3$
107	$\frac{1}{x(x+3)} - \frac{1}{x(2-x)} = \frac{1}{6x}$	$x_1 = -1, \quad x_2 = 12$
108	$\frac{x+2}{x} - \frac{(2+3x)}{2(4-3x)} = 1 + \frac{4}{3x^2-4x}$	$x_1 = -6, \quad x_2 = \frac{4}{3} \text{ non accettabile}$
109	$\frac{5}{4x} - \frac{9}{4} = \frac{x-3}{x+1}$	$x_1 = -\frac{5}{13}, \quad x_2 = 1$
110	$\frac{x}{x-6} - \frac{1}{2} = \frac{x}{6} + \frac{x+6}{6-x}$	$x_1 = -3, \quad x_2 = 18$
111	$\frac{4}{(x-2)^2} + 3 = \frac{3x}{2-x}$	$\nexists x \in \mathbb{R}$
112	$\frac{1}{3x-x^2} - \frac{1}{6x} = \frac{1}{2x-x^2}$	$\nexists x \in \mathbb{R}$

113	$\frac{x - \sqrt{3}}{x\sqrt{3} - 1} = \frac{2\sqrt{3}}{3x^2 - 1} - \frac{x}{x\sqrt{3} + 1}$	$x_1 = -\frac{\sqrt{3}}{2}, \quad x_2 = \sqrt{3}$
114	$\frac{4}{(x-2)^2} - \frac{3}{x^2} = \frac{5}{4x - 2x^2}$	$x_1 = \frac{-7 - \sqrt{217}}{7}, \quad x_2 = \frac{-7 + \sqrt{217}}{7}$
115	$\frac{5}{2x+2} + \frac{1}{2x-2} = \frac{3x+2}{x^2+x+1}$	$x_1 = 0, \quad x_2 = 4$
116	$\frac{5}{6+2x} - \frac{1}{x^2-3x} = \frac{5}{9-x^2}$	$x_1 = -\frac{3}{5}, \quad x_2 = 2$
117	$\frac{2}{(x-1)^2} - \left(x - \frac{1}{x-1}\right)\left(x - \frac{1}{x+1}\right) + \left(x - \frac{1}{x-1}\right)^2 = 0$	$x_1 = 1 - \sqrt{3}, \quad x_2 = 1 + \sqrt{3}$
118	$\frac{1}{x-5} - \frac{1}{4-x} = \frac{2}{x-4} + \frac{1}{x-3}$	$x_1 = 5 - \sqrt{2}, \quad x_2 = 5 + \sqrt{2}$
119	$\frac{x+3}{x+1} + \frac{x+5}{x+2} = \frac{2x+2}{x}$	$x_1 = -\frac{4}{3}, \quad x_2 = 1$
120	$\frac{x^2}{200-x^2} = \frac{1}{7}$	$x_1 = -5, \quad x_2 = 5$
121	$\frac{2(x-1)}{x+1} + \frac{(x+1)}{4(x-1)} = 3$	$x_1 = \frac{-7-4\sqrt{7}}{3}, \quad x_2 = \frac{-7+4\sqrt{7}}{3}$
122	$\frac{x-2}{3-x} + \frac{2x+9}{x^2-9} = \frac{2x+1}{x+3}$	$x_1 = 1 - \sqrt{7}, \quad x_2 = 1 + \sqrt{7}$
123	$\frac{5x^2 - 5x - 28}{x^2 - x - 6} = \frac{4}{x+2} - \frac{2}{x-3}$	$x_1 = -1, \quad x_2 = \frac{12}{5}$