risolvi le seguenti equazioni di grado superiore al secondo in R

	equazioni binomie	
1	$x^3 + 27 = 0$	-3
2	$27x^3 + 1 = 0$	$-\dfrac{1}{3}$
3	$32x^5 - 1 = 0$	$\dfrac{1}{2}$
4	$64x^6 + 1 = 0$	*impossibile*
5	$27x^6 - 64 = 0$	$\pm\dfrac{2\sqrt{3}}{3}$
6	$36x^2 - 81 = 0$	$\pm\dfrac{3}{2}$
7	$4x^5 - 2 = 0$	$\dfrac{\sqrt[5]{2^4}}{2}$
8	$x^4 - 4 = 0$	$\pm\sqrt{2}$
9	$x^4 - 16x^2 = 0$	$\pm 4;\, 0;\, 0$
10	$2x^3 + 250 = 0$	-5
11	$4x^5 - 128 = 0$	2
12	$2x^6 - 16 = 0$	$\pm\sqrt{2}$
13	$3x^4 + 27 = 0$	*impossibile*
14	$8x^3 - 27 = 0$	$\dfrac{3}{2}$
15	$16x^4 - 81 = 0$	$\pm\dfrac{3}{2}$

16	$16x^8 - 1 = 0$	$\pm\dfrac{\sqrt{2}}{2}$
17	$5x^6 + 30 = 0$	*impossibile*
18	$2x^6 - 250 = 0$	$\pm\sqrt{5}$
19	$9x^4 + 1 = 0$	*impossibile*
20	$9x^3 + 1 = 0$	$\dfrac{\sqrt[3]{3}}{3}$
21	$9x^3 - 1 = 0$	$-\dfrac{\sqrt[3]{3}}{3}$
22	$4x^8 - 1 = 0$	$\pm\dfrac{\sqrt[4]{8}}{2}$
23	$\dfrac{8}{9}x^3 + \dfrac{3}{8} = 0$	$-\dfrac{3}{4}$
24	$\dfrac{1}{2} - \dfrac{3}{4}x^6 = 0$	$\pm\dfrac{\sqrt[6]{486}}{3}$
25	$5x^5 + 135x^2 = 0$	$-3;\ 0$
26	$x^7 + x^2 = 0$	$-1;\ 0$
27	$16x^5 + x = 0$	0
28	$5x^4 - 40x = 0$	$0;\ 2$
29	$x^5 - 25x = 0$	$\pm\sqrt{5};\ 0$
30	$x^5 + 27x^2 = 0$	$-3;\ 0$
31	$\dfrac{1}{2}x^8 + 64x = 0$	$-2;\ 0$
32	$\dfrac{1}{8}x = \dfrac{1}{2}x^5$	$\pm\dfrac{\sqrt{2}}{2};\ 0$

	equazioni riconducibili a binomie	
33	$(x + 2)^3 - 27 = 0$	1
34	$(x - 3)^5 + 1 = 0$	2
35	$2(x^3 + 2)^5 - 2 = 0$	-1
36	$\left(\dfrac{1 - x}{5}\right)^4 - 16 = 0$	$-9;\ 11$
37	$(x^3 + 2)^6 - 1 = 0$	$-\sqrt[3]{3};\ -1$
38	$3\left(\dfrac{2x - 3}{4}\right)^4 + 48 = 0$	*impossibile*
39	$(x^2 - 1)^4 - 16 = 0$	$\pm\sqrt{3}$
40	$(2x^2 - 7x + 1)^3 - 27 = 0$	$\dfrac{7 - \sqrt{65}}{4};\ \dfrac{7 + \sqrt{65}}{4}$
41	$5\left(\dfrac{x + 1}{3}\right)^4 - 5 = 0$	$-4;\ 2$

	equazioni biquadratiche	
42	$x^4 - 25x^2 + 144 = 0$	$\pm 3;\ \pm 4$
43	$4x^4 - 12x^2 - 16 = 0$	± 2
44	$9x^4 - 8x^2 - 1 = 0$	± 1
45	$x^4 - 10x^2 + 9 = 0$	$\pm 1;\ \pm 3$
46	$x^4 - 7x^2 + 1 = 0$	$\pm\dfrac{1}{2}(3 + \sqrt{5});\ \pm\dfrac{1}{2}(\sqrt{5} - 3)$
47	$x^4 - 5x^2 + 4 = 0$	$\pm 1;\ \pm 2$

48	$4x^4 - 13x^2 + 9 = 0$	$\pm 1; \pm\dfrac{3}{2}$
49	$4x^4 - 15x^2 - 4 = 0$	± 2
50	$\dfrac{1}{2} - \dfrac{3}{2}x^2 + x^4 = 0$	$\pm\dfrac{\sqrt{2}}{2}; \pm 1$
51	$16x^4 - 40x^2 + 9 = 0$	$\pm\dfrac{1}{2}; \pm\dfrac{3}{2}$
52	$x^4 - 13x^2 + 36 = 0$	$\pm 2; \pm 3$
53	$x^4 + 4x^2 - 5 = 0$	± 1
54	$25x^4 - 34x^2 + 9 = 0$	$\pm\dfrac{3}{5}; \pm 1$
55	$x^4 - 11x^2 + 18 = 0$	$\pm\sqrt{2}; \pm 3$
56	$x^4 + (2\sqrt{2} - 8)x^2 + 15 - 10\sqrt{2} = 0$	$\pm(\sqrt{2} - 1); \pm\sqrt{5}$
57	$x^4 - 5x^2 - 14 = 0$	$\pm\sqrt{7}$
58	$4x^4 - 17x^2 + 4 = 0$	$\pm\dfrac{1}{2}; \pm 2$
59	$x^4 - 17x^2 + 16 = 0$	$\pm 1; \pm 4$
60	$4x^4 - 41x^2 + 45 = 0$	$\pm\dfrac{\sqrt{5}}{2}; \pm 3$
61	$4x^4 + 11x^2 - 45 = 0$	$\pm\dfrac{3}{2}$
62	$8x^6 - 7x^3 - 1 = 0$	$-\dfrac{1}{2}; 1$
63	$x^8 - 5x^4 + 4 = 0$	$\pm\sqrt{2}; \pm 1$
64	$x^4 - 5x^2 + 4 = 0$	$\pm 2; \pm 1$
65	$x^4 + 4x^2 - 5 = 0$	± 1

66	$2x^4 - x^2 + 5 = 0$	*impossibile*
67	$x^4 - 13x^2 + 36 = 0$	$\pm 3; \pm 2$
68	$x^4 - 2x^2 - 3 = 0$	$\pm\sqrt{3}$
69	$4x^4 + 11x^2 - 3 = 0$	$\pm\dfrac{1}{2}$
70	$x^4 + x^2 + 2 = 0$	*impossibile*
71	$x^4 - 5x^2 + 6 = 0$	$\pm\sqrt{3}; \pm\sqrt{2}$
72	$x^4 + 9x^2 - 10 = 0$	$-1; 1$
73	$3x^4 - 7x^2 + 2 = 0$	$\pm\sqrt{2}; \pm\dfrac{\sqrt{3}}{3}$
74	$x^4 + 6x^2 + 8 = 0$	*impossibile*
75	$x^4 + 13x^2 + 36 = 0$	*impossibile*
76	$36x^4 - 97x^2 + 36 = 0$	$\pm\dfrac{3}{2}; \pm\dfrac{2}{3}$
77	$x^4 - 8x^2 - 9 = 0$	± 3
78	$x^6 - 9x^3 + 8 = 0$	$1; 2$
79	$x^8 - 20x^4 + 64 = 0$	$\pm 2; \pm\sqrt{2}$
80	$x^6 - 28x^3 + 27 = 0$	$1; 3$
81	$x^8 + 7x^4 - 144 = 0$	$\pm\sqrt{3}$
82	$x^{10} - 31x^5 - 32 = 0$	$-1; 2$
83	$x^8 + 6x^4 - 7 = 0$	± 1

84	$3x^6 - 8x^3 + 5 = 0$	$1; \dfrac{\sqrt[3]{45}}{3}$
85	$x^{12} - 37x^6 + 36 = 0$	$\pm\sqrt[3]{6}; \pm 1$
86	$16x^6 + 6x^3 - 1 = 0$	$-\dfrac{\sqrt[3]{4}}{2}; \dfrac{1}{2}$
87	$x^6 - \dfrac{7}{8}x^3 - \dfrac{1}{8} = 0$	$-\dfrac{1}{2}; 1$
88	$x^{10} + \dfrac{31}{32}x^5 - \dfrac{1}{32} = 0$	$-1; \dfrac{1}{2}$
89	$x^4 - \dfrac{5 - 2\sqrt{3}}{4}x^2 + \dfrac{4 - 2\sqrt{3}}{16} = 0$	$\pm\dfrac{\sqrt{3} - 1}{2}; \pm\dfrac{1}{2}$

equazioni particolari riconducibili a equazioni binomie o trinomie

90	$(x^2 - 2x)^2 - 4(x^2 - 2x) - 5 = 0$	$1 - \sqrt{6}; 1; 1 + \sqrt{6}$
91	$(x^2 + x)^2 - 8(x^2 + x) + 12 = 0$	$-3; 1; \pm 2$
92	$(x^2 - 4)^2 - 5(x^2 - 4) + 4 = 0$	$\pm 2\sqrt{2}; \pm\sqrt{5}$
93	$(5x^2 + 7x)^2 - 3(5x^2 + 7x) - 18 = 0$	$-2; \dfrac{3}{5}$
94	$(x^3 + 1)^2 + 5(x^3 + 1) - 14 = 0$	$-2; 1$
95	$(x^4 + x^2)^2 - 8(x^4 + x^2) + 12 = 0$	$\pm\sqrt{2}; \pm 1$
96	$(x^2 + 2)^4 - 5(x^2 + 2)^2 + 4 = 0$	0
97	$(x^3 - 1)^6 + 9(x^3 - 1) + 8 = 0$	$-1; 0$
98	$(x^2 - x)^8 - 17(x^2 - x)^4 + 16 = 0$	$\dfrac{1 - \sqrt{5}}{2}; -1; \dfrac{1 + \sqrt{5}}{2}; 2$
99	$(2x^3 - 1)^6 - 9(2x^3 - 1)^3 + 8 = 0$	$1; \dfrac{\sqrt[3]{12}}{2}$

100	$\left(x^2 + 2\sqrt{2}x\right)^2 + 14\left(x^2 + 2\sqrt{2}x\right) + 24 = 0$	$-\sqrt{2}$
	equazioni risolvibili mediante scomposizione	
101	$x^3 - 7x^2 + 12x = 0$	$0; \ 3; \ 4$
102	$x^3 - 2x^2 - x + 2 = 0$	$\pm 1; \ 2$
103	$5x^9 - 5x = 0$	$\pm 1; \ 0$
104	$5x^3 - 31x^2 + 31x - 5 = 0$	$\dfrac{1}{5}; \ 1; \ 5$
105	$3x^4 - 3x^3 - 12x^2 + 12x = 0$	$0; \ 1; \ \pm 2$
106	$x^5 - 8x^3 - 9x = 0$	$\pm 3; \ 0; \ 3$
107	$x^3 - 3x^2 - 3x + 9 = 0$	$\pm\sqrt{3}; \ 3$
108	$x^5 - 3x^4 - 3x^3 = 0$	$\dfrac{3\pm\sqrt{21}}{2}; \ 0; \ 0; \ 0$
109	$x^3 + 3x^2 + 3x + 1 = 0$	$-1; \ -1; \ -1$
110	$x^3 + 3x^2 - x - 3 = 0$	$\pm 1; \ -3$
111	$3x^3 - 5x^2 + 2x = 0$	$0; \ 1; \ \dfrac{2}{3}$
112	$2x^4 - 5x^3 - 18x^2 + 45x = 0$	$\pm 3; \ 0; \ \dfrac{5}{2}$
113	$x^3 - 9x^2 - 4x + 36 = 0$	$\pm 2; \ 9$
114	$x^4 - 5x^3 + 2x^2 + 20x - 24 = 0$	$-2; \ 3; \ 2; \ 2$
115	$6x^3 - 7x^2 - x + 2 = 0$	$1; \ -\dfrac{1}{2}; \ \dfrac{2}{3}$

116	$x^3 - 2x + 1 = 0$	$1; \dfrac{-1 \pm \sqrt{5}}{2}$
117	$3x^3 - 4x^2 + 1 = 0$	$1; \dfrac{1 \pm \sqrt{13}}{6}$
118	$x^3 - 2x - 21 = 0$	3
119	$6x^4 - 13x^3 - 3x^2 + 12x - 4 = 0$	$-1; 2; \dfrac{1}{2}; \dfrac{2}{3}$
120	$2x^4 - 3x^3 - 12x^2 + 7x + 6 = 0$	$1; -\dfrac{1}{2}; -2; 3$
121	$8x^4 - 12x^3 + 6x^2 - x = 0$	$0; \dfrac{1}{2}; \dfrac{1}{2}; \dfrac{1}{2}$
122	$x^4 - x^3 - x^2 - x - 2 = 0$	$-1; 2$
123	$x^4 - 2x^3 - 7x^2 + 20x - 12 = 0$	$-3; 1; 2; 2$
124	$x^3 - 6x^2 + 11x - 6 = 0$	$1; 2; 3$
125	$5x^3 - 21x^2 - 21x + 5 = 0$	$-1; \dfrac{1}{5}; 5$
126	$6x^4 - 5x^3 - 38x^2 - 5x + 6 = 0$	$-2; -\dfrac{1}{2}; \dfrac{1}{3}; 3$
127	$6x^3 + 7x^2 - 7x - 6 = 0$	$-\dfrac{3}{2}; -\dfrac{2}{3}; 1$
128	$3x^4 - 10x^3 + 10x - 3 = 0$	$\pm 1; \dfrac{1}{3}; 3$
129	$(x^2 - 3)^6 + 13(x^2 - 3)^3 + 40 = 0$	$\pm 1; \pm\sqrt{3 - \sqrt[3]{5}}$
130	$2(x^2 - 1)(x^2 + 3) + 7x = 7x^3$	$\pm 1; 2; \dfrac{3}{2}$
131	$(x^2 - 1)^2 - x^2 + 2x - 1 = 0$	$0; -2; 1$
132	$(x^2 - 1)(x^2 - 9) = 0$	$\pm 1; \pm 3$

equazioni di riepilogo

133	$x + 81 = \dfrac{1}{9}x(x^5 + 9)$	± 3
134	$3x^2(9x + 1) - (x + 8) = x(3x - 1)$	$\dfrac{2}{3}$
135	$3x - (x^2 + 7) + 1 - 3(x^3 + 7x + 27) = (1 + x^2)(1 - x^2)$	± 3
136	$(x^2 - 2)^2 - 4x^2 + 11 = 0$	$\pm\sqrt{3}; \pm\sqrt{5}$
137	$x^4 - (x - 1)(x + 1) = x^2$	± 1
138	$(x^2 + 1)^2 - 5x^2 + 1 = 0$	$\pm\sqrt{2}; \pm 1$
139	$x^3(x^3 + 5) = 27 + \dfrac{3}{8}x^3$	$-2; \dfrac{3}{2}$
140	$\dfrac{1}{3}x^2 + \dfrac{1}{7}(x^2 - 2)^2 + 13 = 0$	*impossibile*
141	$x^3(x + 2) + 2(x^3 - 8) - 4x^3 = x^4(x^4 - 16)$	$\pm 2; \pm 1$
142	$\dfrac{1}{2}x^2(x^2 + 2) - 2(x^2 + 5) = x^2 + 6$	$\pm 2\sqrt{2}$
143	$\dfrac{1}{3}x^2(x^2 + 1) = 2(x + 1)(x - 1)$	$\pm\sqrt{3}; \pm\sqrt{2}$
144	$49x^3 + (8x^3 + 1)^2 = 0$	$-1; -\dfrac{1}{4}$
145	$x^2\left(2x^2 - \dfrac{1}{5}\right) + 1 = x^2(x^2 + 5)$	$\pm\dfrac{\sqrt{5}}{5}; \pm\sqrt{5}$
146	$20(x^2 + 1)(x^2 - 1) - \dfrac{1}{3}(x^4 + 20) = 7(1 - 2x^4)$	± 1
147	$x(3x^3 - 4) = x^2(12 - x)$	$\pm 2; -\dfrac{1}{3}; 0$

148	$\dfrac{1}{4}x^2(x^2-4)=9(x-2)(x+2)$	$\pm 6;\pm 2$
149	$x[2(2x^2-3)-1]=9x$	$\pm 2;0$
150	$\dfrac{x(1-x^2)}{4}-\dfrac{1}{17}(x^2+1)(x^2-1)=0$	$-4;\pm 1;-\dfrac{1}{4}$

equazioni frazionarie		
151	$\left(\dfrac{x+1}{x}\right)^3+125=0$	$-\dfrac{1}{6}$
152	$\left(\dfrac{1}{x}+x\right)^3-27=0$	$\dfrac{3-\sqrt{5}}{2};\dfrac{3+\sqrt{5}}{2}$
153	$16\left(\dfrac{3x}{x-2}\right)^4-81=0$	$-2;\dfrac{2}{3}$
154	$8\left(\dfrac{x^2-1}{x^2}\right)^3-27=0$	$impossibile$
155	$16\left(\dfrac{x-1}{2x}\right)^8-1=0$	$-1-\sqrt{2};-1+\sqrt{2}$
156	$\left(\dfrac{x^2+2}{x}\right)^2-2\left(\dfrac{x^2+2}{x}\right)-8=0$	$2-\sqrt{2};\ 2+\sqrt{2}$
157	$4\left(x+\dfrac{1}{x}\right)^2-16\left(x+\dfrac{1}{x}\right)+15=0$	$\dfrac{1}{2};2$
158	$\left(\dfrac{2x-x^2}{x^2+1}\right)^2+2\left(\dfrac{2x-x^2}{x^2+1}\right)+1=0$	$-\dfrac{1}{2}$
159	$\left(\dfrac{x^2+4}{2-x}\right)^2+5\left(\dfrac{x^2+4}{2-x}\right)+7=0$	$impossibile$
160	$\left(\dfrac{x+1}{x-1}\right)^4-5\left(\dfrac{x+1}{x-1}\right)^2+4=0$	$0;\dfrac{1}{3};3$
161	$\left(\dfrac{x+2}{x-4}\right)^4-13\left(\dfrac{x+2}{x-4}\right)^2+36=0$	$2;\dfrac{5}{2};\ 7;10$
162	$\dfrac{x^2-3x}{2x}-\dfrac{x-2}{x-1}=0$	$3-\sqrt{2};\ 3+\sqrt{2}$

163	$\dfrac{4}{x^3+1} - \dfrac{4x^3+3}{x^6-1} = 8$	$\pm\dfrac{\sqrt{2}}{2}$
164	$\dfrac{x^2+1}{x^2} = x+1$	1
165	$\dfrac{1}{5}x^5 + 1 = \dfrac{x+25}{x}$	$\pm\sqrt{5}$
166	$8x - \dfrac{1-x}{x} = \dfrac{1-x}{x^2} + 1$	$\dfrac{1}{2}$
167	$\dfrac{x^4+x^3-2}{x} - x^2 = 0$	$\pm\sqrt[4]{2}$
168	$\dfrac{x^2+9}{5} + \dfrac{2}{x-3} = \dfrac{10+9x-3x^2}{5x-15}$	*impossibile*
169	$\dfrac{5}{1+x^4} - \dfrac{3}{1-x^4} = 0$	$\pm\dfrac{\sqrt{2}}{2}$
170	$\dfrac{1}{2}x + \dfrac{x+\sqrt{2}}{5x^5-2} = 0$	*impossibile*
171	$\dfrac{4x^3+3}{x^6-1} + 8 = \dfrac{4}{x^3+1}$	$\pm\dfrac{\sqrt{2}}{2}$
172	$\dfrac{x^2+1}{x^2-1} - \dfrac{1}{x^2+1} = \dfrac{2(5x^2+1)}{x^4-1}$	$\pm3;\ 0$
173	$\dfrac{x^2+4}{x^2+3} - \dfrac{x^2+2}{x^2-3} = \dfrac{10}{9-x^4}$	*impossibile*
174	$x^2 + \dfrac{1}{x^2} = \dfrac{17}{4}$	$\pm2;\ \pm\dfrac{1}{2}$
175	$\dfrac{2}{x^2-1} = \dfrac{x^2-1}{2}$	$\pm\sqrt{3}$
176	$\dfrac{x^2-1}{8} - \dfrac{7}{x^2+1} - 3 = 0$	$\pm3\sqrt{3}$
177	$\dfrac{x^2-1}{6} + \dfrac{4}{3x^2-3} = \dfrac{3}{2}$	$\pm3;\ \pm\sqrt{2}$
178	$\dfrac{4(x^4+2)}{x^4} + \dfrac{(x^2+5)(x^2-5)}{2} = 0$	$\pm2;\pm1$

179	$\dfrac{1}{x^2} - \dfrac{3}{4} = \dfrac{1}{2 - x^2}$	$\pm 2; \pm \dfrac{\sqrt{6}}{3}$
180	$\dfrac{3}{x^2 - 9} - \dfrac{2(x^2 - 10)}{5x^2} = 0$	$\pm \dfrac{3}{2}\sqrt{10}; \pm 2$
181	$\dfrac{1}{x^3 - 1} - 1 = \dfrac{5}{2} - x^3$	$\dfrac{\sqrt[3]{12}}{2}; \sqrt[3]{3}$
182	$\dfrac{x^2 + 2}{x^2 + 1} + \dfrac{1}{20} = \dfrac{x^2 + 1}{x^2}$	± 2
183	$\dfrac{1}{x^2 + 4} - \dfrac{1}{3} + \dfrac{1}{x^2 - 4} = 0$	$\pm 2\sqrt{2}$
184	$\dfrac{x + 1}{x - 1} + \dfrac{5 - x^2}{x^2 - 2x + 1} = (x + 1)^2$	$\pm \sqrt{3}$
185	$\dfrac{4}{x} + \dfrac{x^2}{2} = 0$	-2
186	$2x^2 + 1 - \dfrac{3(x^2 + 4)}{x^2} = 0$	$\pm \sqrt{3}$
187	$\dfrac{x^2 - 3}{x^2} = \dfrac{3}{4}(4x - 3) - \dfrac{13}{4x}$	$-1; \dfrac{3}{4}; \dfrac{4}{3}$
188	$\dfrac{1}{8}x - \dfrac{2}{81x^3} = 0$	$\pm \dfrac{2}{3}$
189	$\dfrac{x^2 + 2}{x^2 + 1} - \dfrac{2x^2}{x^2 - 1} = 0$	*impossibile*
190	$\dfrac{1}{x^2 - 3} = 5 - x^2$	± 2
191	$\dfrac{3x^2 + 3}{x^2 - 1} = 10 - \dfrac{3x^2 - 3}{x^2 + 1}$	$\pm \sqrt{2}$
192	$\dfrac{8}{x^2 - 5} = 3 - \dfrac{7}{x^2 - 2}$	$-3; \pm \sqrt{3}$
193	$\dfrac{3}{5}x - \dfrac{25}{9x^2} = 0$	$\dfrac{5}{3}$
194	$\dfrac{x^2 + 2}{2x^2} = 2 - \dfrac{2x^2}{x^2 + 2}$	$\pm \sqrt{2}$

195	$\dfrac{x^2}{6-x^2} = \dfrac{x^2+6}{x^2-6} - \dfrac{x^2+3}{6}$	$\pm 3\sqrt{2}$
196	$\dfrac{5x^2+10}{16x^4-32} = \dfrac{1}{8x^4-16} - \dfrac{1}{5x^6-10x^2}$	$impossibile$
197	$x^2 + \dfrac{x^4}{2-x^2} = \dfrac{x^2+2}{x^4-4x^2+4} - 2$	$\pm\dfrac{\sqrt{30}}{5}$
198	$2x\left(4x^2 + \dfrac{1}{x+1}\right) - 18x = \dfrac{2x}{x+1} + 2(2x+3)(2x-3)$	$\pm\dfrac{3}{2};\ 1$