

di angoli notevoli		
1	$\left(\operatorname{sen} 360^\circ + \frac{1}{2} \cos 180^\circ\right) \operatorname{ctg} 90^\circ$	0
2	$\left(\operatorname{tg} 0^\circ - \frac{1}{3} \operatorname{sen} 270^\circ\right)^{\frac{1}{2}}$	$\frac{\sqrt{3}}{3}$
3	$(\sec 180^\circ + \operatorname{cosec} 90^\circ)(1 + \cos 0^\circ)$	0
4	$\frac{\cos 270^\circ + \operatorname{tg} 180^\circ}{3 \operatorname{cosec} 90^\circ}$	0
5	$\operatorname{sen}^2 90^\circ + \cos^2 360^\circ$	2
6	$\left(\operatorname{tg} \pi + \operatorname{ctg} \frac{\pi}{2}\right) \cos 0$	0
7	$\frac{\cos \pi + \frac{1}{2} \cos \frac{\pi}{2}}{2 \operatorname{sen} \frac{3}{2} \pi}$	$\frac{1}{2}$
8	$\sec \pi (\operatorname{sen}^2 2\pi + \cos 0)$	-1
9	$\sec 0 \operatorname{sen} \pi + \sqrt{5} \operatorname{sen} \frac{\pi}{2}$	$\sqrt{5}$
10	$\frac{1 + \operatorname{tg} \pi}{\operatorname{cosec} \frac{\pi}{2}}$	1
11	$(4 \operatorname{sen} 30^\circ + \sqrt{2} \operatorname{tg} 45^\circ) \left(1 + \frac{1}{3} \cos 30^\circ\right)$	$(2 + \sqrt{2}) \left(1 + \frac{\sqrt{3}}{6}\right)$
12	$4 \cos 45^\circ \operatorname{sen}^2 60^\circ$	$\frac{3}{2} \sqrt{2}$
13	$(\operatorname{sen} 60^\circ + \operatorname{ctg}^2 45^\circ) \frac{1}{\operatorname{sen} 30^\circ}$	$\sqrt{3} + 2$
14	$1 - \operatorname{sen} 45^\circ \cos 45^\circ$	$\frac{1}{2}$
15	$\operatorname{tg}^2 30^\circ \operatorname{sen}^2 60^\circ$	$\frac{1}{4}$
16	$\left(\operatorname{sen} \frac{\pi}{3} + \cos \frac{\pi}{6}\right) \frac{1}{\operatorname{tg} \frac{\pi}{3}}$	1

17	$\left(\sqrt{3} \cos \frac{\pi}{6} + \operatorname{sen} \frac{\pi}{6}\right) \operatorname{ctg}^2 \frac{\pi}{4}$	2
18	$\sqrt{2} \cos \frac{\pi}{4} + 2\sqrt{3} \operatorname{sen} \frac{\pi}{3}$	4
19	$\operatorname{cosec} \frac{\pi}{4} \frac{1}{\sec \frac{\pi}{3}}$	$\frac{\sqrt{2}}{2}$
20	$\frac{3 \operatorname{tg} \frac{\pi}{6} + \operatorname{tg} \frac{\pi}{3}}{\operatorname{tg} \frac{\pi}{4}}$	$2\sqrt{3}$
21	$\frac{a \operatorname{cosec}^2 90^\circ + b \sec^2 0^\circ}{a \operatorname{sen} 270^\circ}$	$-\frac{a+b}{a}$
22	$(2a \cos 180^\circ)^2 + (2b \cos 270^\circ)^2$	$4a^2$
23	$\left(\frac{\sqrt{a} \sec 0^\circ}{a \cos 180^\circ}\right) \operatorname{sen} 270^\circ$	$\frac{\sqrt{a}}{a}$
24	$\frac{b - \cos 90^\circ}{\operatorname{sen} 270^\circ} - \frac{a}{\sec 0^\circ}$	$-(a+b)$
25	$\sqrt[3]{a} \operatorname{tg} 0^\circ - \frac{b}{\operatorname{ctg}^2 90^\circ - 1}$	b
26	$(\operatorname{tg}^2 \pi + a) \cos 0 + \operatorname{sen} \frac{3}{2} \pi$	$a - 1$
27	$\frac{a \cos \pi + \operatorname{sen} \frac{\pi}{2}}{a \operatorname{cosec} \frac{3}{2} \pi + b \sec \pi}$	$\frac{a-1}{a+b}$
28	$\frac{4a\sqrt{3} \operatorname{sen} \frac{3}{2} \pi - b \cos \frac{\pi}{2}}{a \operatorname{cosec} \frac{3}{2} \pi}$	$4\sqrt{3}$
29	$b \cos 2\pi(\sec 0 + a \operatorname{tg} 2\pi)$	b
30	$\sec 2\pi \operatorname{tg}^2 \pi + 3a \operatorname{sen} \frac{3}{2} \pi$	$-3a$
31	$\sqrt{2ab(\operatorname{sen}^2 30^\circ + \operatorname{ctg} 45^\circ)}$	$\frac{\sqrt{10ab}}{2}$
32	$\frac{3}{2} a \operatorname{cosec} 60^\circ (b \cos 45^\circ - c \operatorname{tg} 30^\circ)$	$\frac{\sqrt{6}ab}{2} - ac$

33	$\sqrt{a} \operatorname{ctg} 45^\circ + \frac{b \operatorname{sen} 45^\circ}{1 + c \operatorname{tg} 30^\circ}$	$\sqrt{a} + \frac{3}{2} \sqrt{2} \frac{b}{3 + \sqrt{3}c}$
34	$\frac{b^2 \operatorname{cosec}^2 60^\circ}{\operatorname{sen} 30^\circ} + \frac{a}{\operatorname{sec}^2 60^\circ}$	$\frac{8}{3} b^2 + \frac{a}{4}$
35	$\frac{2a + \operatorname{sen} 45^\circ}{b \cos 60^\circ} \operatorname{ctg} 30^\circ$	$\frac{2\sqrt{3}}{b} \left(2a + \frac{\sqrt{2}}{2} \right)$
36	$\frac{\sqrt{a} \operatorname{sen} \frac{\pi}{3} \sqrt{b} \operatorname{tg} \frac{\pi}{4}}{c \operatorname{cosec} \frac{\pi}{6}}$	$\frac{\sqrt{3ab}}{c}$
37	$\left(a \operatorname{tg} \frac{\pi}{3} - b \operatorname{ctg} \frac{\pi}{6} \right) b \operatorname{cosec}^2 \frac{\pi}{4}$	$2\sqrt{3}b(a - b)$
38	$\left(1 - a \operatorname{sen} \frac{\pi}{4} - b \operatorname{sen} \frac{\pi}{6} \operatorname{tg}^2 \frac{\pi}{4} \right)^{\frac{1}{3}}$	$\left(1 - \frac{a\sqrt{2}}{2} - \frac{b}{2} \right)^{\frac{1}{3}}$
39	$\frac{\sqrt{2a} \operatorname{cosec} \frac{\pi}{4}}{1 + b \operatorname{sec} \frac{\pi}{3}} b \operatorname{ctg} \frac{\pi}{4}$	$\frac{2\sqrt{a} b}{1 + 2b}$
40	$\left(a \cos^2 \frac{\pi}{4} + b \operatorname{sen} \frac{\pi}{6} \right) c \operatorname{cosec} \frac{\pi}{3}$	$\left(\frac{a+b}{\sqrt{3}} \right) c$

con angoli superiori a 360°

41	$(\cos 360^\circ + 2 \cos 450^\circ)(1 - \operatorname{tg} 540^\circ)$	1
42	$\sqrt{2} \operatorname{sen} 450^\circ + \operatorname{tg}^2 360^\circ$	$\sqrt{2}$
43	$\left(3 \operatorname{tg} 540^\circ + \frac{2}{5} \operatorname{ctg} 450^\circ \right)^{\frac{\sqrt{2}}{2}}$	0
44	$\operatorname{sen} 630^\circ + \frac{\cos^2 540^\circ}{\operatorname{sen} 450^\circ}$	0
45	$\operatorname{sec} 360^\circ \operatorname{cosec} 450^\circ + \sqrt{3} \operatorname{tg} 540^\circ$	1
46	$\left(\cos \frac{5}{2} \pi + \frac{1}{2} \cos 3\pi \right) \operatorname{sen} \frac{3}{2} \pi$	$\frac{1}{2}$
47	$\frac{\operatorname{tg} \pi + \operatorname{ctg} \frac{\pi}{2}}{\cos 2\pi}$	0
48	$\frac{1}{10} \operatorname{sec} 3\pi \operatorname{cosec} \frac{3}{2} \pi$	$\frac{1}{10}$

49	$\sqrt{3} \operatorname{sen} \frac{5}{2} \pi \frac{1}{3} \cos 2\pi$	$\frac{\sqrt{3}}{3}$
50	$\left(1 - \cos \frac{3}{2} \pi\right) (1 + \cos 2\pi)$	2
51	$2 \operatorname{sen} 390^\circ + \frac{\cos^2 390^\circ}{\operatorname{sen} 405^\circ}$	$\frac{4 + 3\sqrt{2}}{4}$
52	$\frac{1 - \cos 420^\circ}{1 + \cos 420^\circ} - \operatorname{ctg}^2 390^\circ$	$-\frac{8}{3}$
53	$\operatorname{tg} 405^\circ (1 + \operatorname{ctg} 390^\circ) - 1$	$\sqrt{3}$
54	$\frac{\sec 390^\circ}{1 + \operatorname{tg}^2 420^\circ} + \frac{1}{\operatorname{cosec} 390^\circ}$	$\frac{\sqrt{3} + 3}{6}$
55	$\operatorname{ctg}^2 420^\circ - \operatorname{cosec}^2 390^\circ + \frac{1}{\sec 405^\circ}$	$\frac{3\sqrt{2} - 22}{6}$
56	$\left(\operatorname{tg} \frac{9}{4} \pi + 1\right) \sec \frac{7}{3} \pi$	4
57	$\left(\frac{\cos \frac{9}{4} \pi}{1 - \operatorname{sen} \frac{13}{6} \pi}\right) - \operatorname{sen} \frac{9}{4} \pi$	$\frac{\sqrt{2}}{2}$
58	$\frac{\operatorname{ctg}^2 \frac{13}{6} \pi - \cos^2 \frac{7}{3} \pi}{\operatorname{cosec} \frac{7}{3} \pi}$	$\frac{11}{8} \sqrt{3}$
59	$\cos \frac{9}{4} \pi + \frac{\operatorname{sen}^2 \frac{9}{4} \pi}{\cos \frac{7}{3} \pi}$	$\frac{2 + \sqrt{2}}{2}$
60	$\frac{\operatorname{cosec} \frac{7}{3} \pi}{\sec \frac{7}{3} \pi} \operatorname{tg} \frac{9}{4} \pi$	$\frac{\sqrt{3}}{3}$
61	$a\sqrt{3}(\cos^2 360^\circ + \operatorname{ctg} 450^\circ)$	$\sqrt{3}a$
62	$\frac{\sec 360^\circ}{a} (\sqrt{a} \operatorname{sen}^2 540^\circ - b \cos^2 540^\circ)$	$-\frac{b}{a}$
63	$(\operatorname{sen} 630^\circ + a^2 \cos 630^\circ)^2$	1
64	$\frac{-b \cos 360^\circ - a \operatorname{sen} 630^\circ}{(a + b) \sec 540^\circ}$	$\frac{b - a}{a + b}$

65	$\sqrt{c} \left(\frac{\sqrt{3}}{2} a \sec 540^\circ + \frac{\sqrt{2}}{3} b \operatorname{cosec} 450^\circ \right)$	$\frac{\sqrt{2c}}{3} b - \frac{\sqrt{3ca}}{2}$
66	$\left(a \cos 3\pi + \operatorname{sen} \frac{5}{2}\pi \right)^2 + \left(\cos \frac{5}{2}\pi - \sqrt{b} \operatorname{sen} \frac{7}{2}\pi \right)^2$	$b + (1 - a)^2$
67	$\frac{a^2 \operatorname{cosec} \frac{7}{2}\pi + b \sec 2\pi}{a \cos 3\pi - b^3 \operatorname{sen} 2\pi}$	$\frac{a^2 - b}{a}$
68	$\left(b^4 \operatorname{tg} 2\pi + a^6 \operatorname{cosec} \frac{7}{2}\pi \right)^2 2ab \operatorname{sen} \frac{7}{2}\pi$	$-2a^{13}b$
69	$(1 + a \operatorname{tg}^2 3\pi) \sqrt{b} \operatorname{sen} \frac{5}{2}\pi$	\sqrt{b}
70	$a^2 \cos^4 3\pi - b^3 \operatorname{sen}^4 3\pi - \frac{2c^4}{\sec \frac{7}{2}\pi}$	a^2
71	$\operatorname{sen}^2 390^\circ \frac{\sqrt{ab}}{\operatorname{cosec} 420^\circ} + a \operatorname{ctg} 405^\circ$	$\frac{\sqrt{3ab}}{8} + a$
72	$\frac{a \operatorname{tg} 420^\circ}{b - \operatorname{ctg} 405^\circ} c \sec^2 390^\circ$	$\frac{4ac\sqrt{3}}{3(b-1)}$
73	$(\operatorname{sen} 420^\circ + a^3 \operatorname{tg} 405^\circ) \operatorname{ctg} 405^\circ - 3a^3$	$\frac{\sqrt{3}}{2} - 2a^3$
74	$(\sqrt{a} \operatorname{tg}^2 420^\circ - 1) \sec^2 390^\circ + 1$	$\frac{4}{3}(3\sqrt{a} - 1) + 1$
75	$\left(\frac{(2b \operatorname{tg} 405^\circ)^2}{\cos^2 420^\circ} \right)^{\frac{1}{4}}$	$2\sqrt{b}$
76	$\left(2a \operatorname{tg}^2 \frac{13}{6}\pi - 1 \right) b \cos^2 \frac{9}{4}\pi$	$\frac{b}{6}(2a - 3)$
77	$\left(4b \operatorname{sen} \frac{13}{6}\pi + 6a \operatorname{sen}^2 \frac{9}{4}\pi \right) \frac{1}{\operatorname{cosec} \frac{7}{3}\pi (a+b) \operatorname{ctg} \frac{13}{6}\pi}$	$\frac{2b+3a}{2(a+b)}$
78	$\left(\frac{a + \operatorname{sen} \frac{9}{4}\pi - b \cos \frac{9}{4}\pi}{1 + \operatorname{sen}^2 \frac{9}{4}\pi + b \cos \frac{9}{4}\pi} \right)^{\frac{1}{2}}$	$\sqrt{\frac{2a + \sqrt{2}(1-b)}{3 + \sqrt{2}b}}$
79	$\frac{(b - 3 \operatorname{ctg}^2 \frac{7}{3}\pi) (b \operatorname{tg} \frac{9}{4}\pi + 2 \cos \frac{7}{3}\pi)}{2b \operatorname{cosec} \frac{13}{6}\pi - 1}$	$\frac{(b-1)(b+1)}{4b-1}$
80	$\frac{\sqrt{ab} \cos \frac{13}{6}\pi \left(1 + a \operatorname{sen}^2 \frac{9}{4}\pi \right)^2}{\left(2 \operatorname{ctg}^2 \frac{9}{4}\pi + \frac{a}{2} \sec \frac{7}{3}\pi \right)^2}$	$\frac{\sqrt{3ab}}{8}$

Espressioni goniometriche

con angoli associati		
81	$\frac{1 + \operatorname{sen}(180^\circ - \alpha) \cos(180^\circ - \alpha)}{\operatorname{sen} \alpha} + \frac{1}{\operatorname{cosec} \alpha}$	$\frac{2 \operatorname{sen}^2 \alpha - \operatorname{sen} \alpha \cos \alpha + \cos^2 \alpha}{\operatorname{sen} \alpha}$
82	$\left(\frac{1}{\operatorname{tg}(180^\circ - \alpha)} - \operatorname{cosec} \alpha \right) \cos(180^\circ - \alpha)$	$(\cos \alpha - 1) \frac{\cos \alpha}{\operatorname{sen} \alpha}$
83	$\sec(180^\circ - \alpha) \cos(180^\circ - \alpha) + \operatorname{sen} \alpha \operatorname{cosec}(180^\circ - \alpha)$	2
84	$\frac{\operatorname{tg}^2 \alpha}{\operatorname{sen}^2(180^\circ - \alpha)} + \frac{\sec \alpha}{\operatorname{cosec}(180^\circ - \alpha)}$	$\frac{1 + \operatorname{sen} \alpha \cos \alpha}{\cos^2 \alpha}$
85	$\operatorname{ctg}(180^\circ - \alpha)(1 - \sec^2 \alpha) + \operatorname{tg}(180^\circ - \alpha)(1 + \operatorname{cosec}^2 \alpha)$	$\frac{-1}{\operatorname{sen} \alpha \cos \alpha}$
86	$2 \operatorname{tg}(\pi - \alpha) \cos^2(\pi - \alpha) + \operatorname{sen} \alpha \operatorname{cosec}(\pi - \alpha)$	$1 - 2 \operatorname{sen} \alpha \cos \alpha$
87	$\frac{1 - \cos(\pi - \alpha)}{\operatorname{sen}^2(\pi - \alpha)} \operatorname{tg}^2(\pi - \alpha) - 2 \sec^2(\pi - \alpha)$	$\frac{\cos \alpha - 1}{\cos^2 \alpha}$
88	$\left(\frac{1}{1 + \operatorname{tg}(\pi - \alpha)} - \frac{1}{\operatorname{ctg}^2(\pi - \alpha)} \right) \cos(\pi - \alpha)$	$\frac{\cos \alpha - 2 \cos^3 \alpha - \operatorname{sen}^3 \alpha}{\cos \alpha (\cos \alpha - \operatorname{sen} \alpha)}$
89	$\sec(\pi - \alpha)(3 - \cos(\pi - \alpha)) + \operatorname{ctg}^2(\pi - \alpha)$	$\frac{2 \cos^3 \alpha + 3 \cos^2 \alpha - \cos \alpha - 3}{\cos \alpha - \cos^3 \alpha}$
90	$\frac{\operatorname{cosec}(\pi - \alpha) - \operatorname{ctg}(-\alpha)}{\cos(\pi - \alpha) \operatorname{cosec} \alpha}$	$-\frac{1 + \cos \alpha}{\cos \alpha}$
91	$\frac{1 + \operatorname{sen}(180^\circ + \alpha) \cos(180^\circ + \alpha)}{\operatorname{sen}(180^\circ + \alpha)} - \frac{1}{\sec(180^\circ + \alpha)}$	$-\operatorname{cosec} \alpha$
92	$\sec(180^\circ + \alpha) \operatorname{cosec}(180^\circ + \alpha) (\operatorname{tg}(180^\circ + \alpha) + \operatorname{ctg} \alpha)$	$\sec^2 \alpha \operatorname{cosec}^2 \alpha$
93	$\frac{1 + \cos(180^\circ + \alpha)}{1 - \cos(180^\circ + \alpha)} - \frac{1 + 2 \cos(180^\circ + \alpha)}{\operatorname{sen}^2(180^\circ + \alpha)}$	$\operatorname{ctg}^2 \alpha$
94	$\operatorname{tg} \alpha (1 + \operatorname{ctg}(180^\circ + \alpha)) - 1$	$\operatorname{tg} \alpha$
95	$\operatorname{sen}(180^\circ + \alpha) \cos(180^\circ + \alpha) (\operatorname{tg} \alpha + \operatorname{ctg}(180^\circ + \alpha))$	1
96	$\frac{\operatorname{sen}^2(\pi + \alpha) - \operatorname{sen}(\pi + \alpha)}{\cos(\pi + \alpha)} + \frac{1}{\operatorname{ctg} \alpha}$	$-\operatorname{sen} \alpha \operatorname{tg} \alpha$

97	$\frac{\cos^2 \alpha - \cos^4(\pi + \alpha)}{1 - \sin^2(\pi + \alpha)} - \sin^2(\pi + \alpha)$	0
98	$\frac{\operatorname{ctg}(\pi + \alpha)}{\operatorname{ctg}^2(\pi + \alpha) + 1} + \cos \alpha (\operatorname{tg}^2(\pi + \alpha) + 1)$	$\sin \alpha \cos \alpha + \sec \alpha$
99	$\sin(\pi + \alpha) \cos(\pi + \alpha) \operatorname{cosec}(\pi + \alpha) - \frac{1 - \sin^2(\pi + \alpha)}{\cos \alpha}$	$-2 \cos \alpha$
100	$\frac{1 - \sin(\pi + \alpha) - \sin^2 \alpha}{\sin(\pi + \alpha) \cos(\pi + \alpha)} + \frac{\cos(\pi + \alpha)}{1 - \sin^2(\pi + \alpha)}$	$\operatorname{ctg} \alpha$
101	$\frac{1 + \sec^2(360^\circ - \alpha) (\sin^2(360^\circ - \alpha) + 1)}{2 \sin \alpha \sec^2(360^\circ - \alpha)}$	$\operatorname{cosec} \alpha$
102	$\frac{\sin(360^\circ - \alpha) \cos(360^\circ - \alpha)}{1 - \sin^2 \alpha} + \frac{1}{\operatorname{ctg}(360^\circ - \alpha)}$	$-2 \operatorname{tg} \alpha$
103	$\frac{\operatorname{tg}^2(360^\circ - \alpha)}{1 - \operatorname{tg}^2(360^\circ - \alpha)} - \operatorname{ctg}(360^\circ - \alpha)$	$\frac{\operatorname{ctg} \alpha + \operatorname{tg}^2 \alpha - \operatorname{tg} \alpha}{1 - \operatorname{tg}^2 \alpha}$
104	$\cos^2(360^\circ - \alpha) + \frac{1}{\operatorname{ctg}^2(360^\circ - \alpha) + 1}$	1
105	$\frac{1}{\operatorname{cosec}^2(360^\circ - \alpha)} + \cos(360^\circ - \alpha) \left(\sin(360^\circ - \alpha) + \frac{1}{\sec \alpha} \right)$	$1 - \sin \alpha \cos \alpha$
106	$\frac{1}{\cos(2\pi - \alpha)(1 + \operatorname{tg}^2(2\pi - \alpha))} + \sec(2\pi - \alpha)$	$(2 + \operatorname{tg}^2 \alpha) \cos \alpha$
107	$-\sin(2\pi - \alpha) \operatorname{tg} \alpha + \frac{1}{\operatorname{cosec}(2\pi - \alpha)}$	$\sin \alpha (\operatorname{tg} \alpha - 1)$
108	$\frac{\sin^2(2\pi - \alpha)}{1 - \sin^2 \alpha} - \frac{1 - \cos^2(2\pi - \alpha)}{\cos^2 \alpha}$	0
109	$\operatorname{cosec}(2\pi - \alpha)(\cos^2 \alpha - 2 \cos^2(2\pi - \alpha) + 1)$	$-\sin \alpha$
110	$\sin(2\pi - \alpha)(\cos^2(2\pi - \alpha) - 1) \frac{1}{\operatorname{tg}^3(2\pi - \alpha)}$	$-\cos^3 \alpha$
111	$(1 - \cos(-45^\circ) + \sin(-30^\circ)) \operatorname{tg}^2(-60^\circ)$	$\frac{3(1 - \sqrt{2})}{2}$
112	$\frac{\sin(-90^\circ) + \sec(-45^\circ)}{\cos(-60^\circ)}$	$2(\sqrt{2} - 1)$