

# Identità goniometriche

risolubili mediante le relazioni fondamentali	
1	$\frac{1 + \operatorname{sen} \alpha \cos \alpha}{\operatorname{sen} \alpha} = \operatorname{cosec} \alpha + \frac{1}{\operatorname{sec} \alpha}$
2	$\frac{\operatorname{sen} \alpha \cos \alpha - 1}{\cos \alpha} = \frac{1}{\operatorname{cosec} \alpha} - \operatorname{sec} \alpha$
3	$\frac{(1 - \cos \alpha)(\cos^2 \alpha + \cos \alpha + 1)}{\cos \alpha} = \frac{2 \operatorname{sen}^2 \alpha - \operatorname{sen}^4 \alpha - 1}{\cos^2 \alpha} + \frac{1}{\cos \alpha}$
4	$\frac{\cos \alpha}{1 - \operatorname{sen}^2 \alpha} + \operatorname{cosec} \alpha = \operatorname{sen} \alpha + \operatorname{sec} \alpha + \frac{1 - \operatorname{sen}^2 \alpha}{\operatorname{sen} \alpha}$
5	$\frac{1}{\operatorname{ctg} \alpha} + \frac{\operatorname{sen}^2 \alpha - 1}{\cos^3 \alpha} = \frac{1 - \operatorname{sen} \alpha - \cos^2 \alpha}{\operatorname{sen} \alpha \cos \alpha}$
6	$\frac{1}{\operatorname{tg} \alpha} - \frac{1}{\operatorname{sec} \alpha} = \frac{\cos \alpha (1 - \operatorname{sen} \alpha)}{\operatorname{sen} \alpha}$
7	$\frac{1}{\cos \alpha (1 + \operatorname{tg}^2 \alpha)} + \frac{1}{\operatorname{cosec} \alpha} = \cos \alpha (\operatorname{tg} \alpha + 1)$
8	$\operatorname{sen}^2 \alpha + \operatorname{tg} \alpha = \frac{\operatorname{sec} \alpha (1 - \cos^2 \alpha)}{\operatorname{sen} \alpha} + \frac{\cos^2 \alpha - \cos^4 \alpha}{1 - \operatorname{sen}^2 \alpha}$
9	$\frac{1}{1 + \operatorname{tg}^2 \alpha} + \frac{1}{\operatorname{cosec} \alpha} = \operatorname{sen} \alpha + \frac{1}{\operatorname{sec}^2 \alpha}$
10	$\operatorname{ctg} \alpha + \frac{\operatorname{sen}^2 \alpha + \operatorname{sen} \alpha - 1}{\operatorname{sen} \alpha \cos \alpha} = \frac{\cos \alpha}{1 - \operatorname{sen}^2 \alpha}$
11	$\operatorname{sec} \alpha - \cos \alpha = \frac{\operatorname{sen}^2 \alpha}{\cos \alpha}$
12	$\frac{2 \cos^2 \alpha - 1}{1 - \operatorname{sen}^2 \alpha} = 1 - \operatorname{tg}^2 \alpha$
13	$\frac{\operatorname{sen}^2 \alpha + \operatorname{tg}^2 \alpha}{1 - \cos^4 \alpha} = \operatorname{sec}^2 \alpha$
14	$\frac{\operatorname{tg}^2 \alpha + 1}{\operatorname{tg}^2 \alpha - 1} = \frac{\operatorname{tg} \alpha + \operatorname{ctg} \alpha}{\operatorname{tg} \alpha - \operatorname{ctg} \alpha}$
15	$\operatorname{sen}^3 \alpha = (\cos \alpha - \cos^3 \alpha) \operatorname{tg} \alpha$
16	$\frac{\operatorname{sen}^2 \alpha + \operatorname{tg}^2 \alpha}{1 - \cos^4 \alpha} = \operatorname{sec}^2 \alpha$
17	$\frac{\cos^2 \alpha - \cos \alpha - 1}{\operatorname{sen} \alpha} + \operatorname{ctg} \alpha = \frac{\operatorname{sen}^3 \alpha - \operatorname{sen} \alpha}{\cos^2 \alpha}$
18	$\frac{1}{2 \cos^2 \alpha - 1} = \frac{1 + \operatorname{tg}^2 \alpha}{1 - \operatorname{tg}^2 \alpha}$
19	$\frac{1 + \operatorname{sen} \alpha}{\operatorname{ctg} \alpha + \cos \alpha} = \frac{\operatorname{tg} \alpha + \operatorname{sen} \alpha}{1 + \cos \alpha}$
20	$(\operatorname{sec} \alpha + \operatorname{tg} \alpha)^2 = \frac{1 + \operatorname{sen} \alpha}{1 - \operatorname{sen} \alpha}$

## Identità goniometriche

21	$\frac{1}{\operatorname{sen} \alpha} + \frac{1}{\operatorname{tg} \alpha} = \frac{\cos \alpha + 1}{\operatorname{sen} \alpha}$
22	$\frac{\cos^2 \alpha \operatorname{sen}^2 \alpha}{\operatorname{tg}^2 \alpha} = \cos^4 \alpha$
23	$\frac{\operatorname{sen} \alpha \cos^2 \alpha}{\operatorname{cotg} \alpha} = \cos \alpha (1 - \cos^2 \alpha)$
24	$\frac{\cos^2 \alpha - 1}{\operatorname{tg} \alpha} - \frac{\operatorname{sen}^2 \alpha}{\operatorname{cotg} \alpha} = -\operatorname{tg} \alpha$
25	$\frac{1 + \operatorname{sen}^2 \alpha}{\operatorname{sen} \alpha} + \operatorname{cotg} \alpha (\cos \alpha - 1) = \frac{2 - \cos \alpha}{\operatorname{sen} \alpha}$
26	$\frac{\operatorname{cosec} \alpha}{\cos \alpha} - \operatorname{cotg} \alpha = \operatorname{tg} \alpha$
27	$\frac{\operatorname{cotg} \alpha}{\cos \alpha \operatorname{cosec} \alpha} = 1$
28	$\frac{\operatorname{tg} \alpha + \operatorname{cotg} \alpha}{\operatorname{tg} \alpha - \operatorname{cotg} \alpha} = \frac{1}{1 - 2\cos^2 \alpha}$
29	$\frac{\operatorname{cotg} \alpha}{\operatorname{sen} \alpha} (1 + \cos \alpha) + 1 = \frac{1}{1 - \cos \alpha}$
30	$\frac{\operatorname{cosec} \alpha \operatorname{sen} \alpha}{\operatorname{tg}^2 \alpha} + 1 = \frac{\operatorname{cotg} \alpha}{\operatorname{sen} \alpha \cos \alpha}$
31	$(\operatorname{sen}^2 \alpha - \cos^2 \alpha) \operatorname{cosec}^2 \alpha = 2 - \sec \alpha \frac{\operatorname{cotg} \alpha}{\operatorname{sen} \alpha}$
32	$\frac{1}{\operatorname{sen} \alpha} + \frac{\operatorname{tg} \alpha}{\operatorname{cosec} \alpha} - 1 = \frac{\operatorname{cotg} \alpha}{\cos \alpha} + \operatorname{sen} \alpha (\operatorname{tg} \alpha - \operatorname{sen} \alpha) - \cos^2 \alpha$
33	$\frac{\operatorname{sen} \alpha + \cos \alpha}{\operatorname{cosec} \alpha} = \frac{\operatorname{tg}^2 \alpha}{1 + \operatorname{tg}^2 \alpha} + \frac{\operatorname{sen} \alpha}{\sec \alpha}$
34	$\frac{\operatorname{sen}^2 \alpha - \cos^2 \alpha}{\operatorname{sen} \alpha + \cos \alpha} = \frac{1}{\operatorname{cosec} \alpha} - \frac{1}{\sec \alpha}$
35	$\frac{\operatorname{sen} \alpha \sec \alpha - 1}{1 + \operatorname{tg} \alpha} = \frac{\operatorname{sen} \alpha - \cos \alpha}{\operatorname{sen} \alpha + \cos \alpha}$
36	$\operatorname{cosec} \alpha \left( \operatorname{sen} \alpha - \frac{\operatorname{cotg} \alpha}{\sec \alpha} \right) = 1 - \operatorname{cotg}^2 \alpha$
37	$\frac{\operatorname{tg}^2 \alpha - 1}{\sec^2 \alpha} = 1 - 2\cos^2 \alpha$
38	$\frac{\operatorname{cotg} \alpha}{\operatorname{cosec} \alpha - 1} + \frac{\operatorname{cosec} \alpha + 1}{\operatorname{cotg} \alpha} = \frac{2}{\sec \alpha - \operatorname{tg} \alpha}$

## risolubili mediante angoli associati

39	$\operatorname{sen}^2(\pi - \alpha) + \cos(\pi - \alpha) = 1 - \cos \alpha - \cos^2 \alpha$
40	$\operatorname{sen}^4(\pi - \alpha) = \cos^4 \alpha - 1 + 2 \operatorname{sen}^2(\pi - \alpha)$

41	$1 + \operatorname{sen} \alpha - \operatorname{sec}(\pi - \alpha) \cos(\pi - \alpha) = \operatorname{sen}(\pi - \alpha) \operatorname{sec} \alpha \cos \alpha$
42	$\frac{\operatorname{ctg} \alpha}{\cos^2(\pi - \alpha)} = \operatorname{tg} \alpha - \operatorname{ctg}(\pi - \alpha)$
43	$\cos \alpha - \operatorname{sen} \alpha = \frac{\cos^2(\pi - \alpha) - \operatorname{sen}^2(\pi - \alpha)}{\operatorname{sen}(\pi - \alpha) - \cos(\pi - \alpha)}$
44	$\operatorname{sen}^2(\pi - \alpha) - \cos(\pi - \alpha) - \operatorname{sen} \alpha \operatorname{tg}(\pi - \alpha) = \operatorname{sec} \alpha + 1 - \cos^2(\pi - \alpha)$
45	$\operatorname{ctg}^2 \alpha + \frac{1 + 2 \cos(\pi + \alpha)}{\operatorname{sen}^2(\pi + \alpha)} = \frac{1 + \cos(\pi + \alpha)}{1 - \cos(\pi + \alpha)}$
46	$-\cos(\pi + \alpha) - \operatorname{sec} \alpha = \operatorname{sen}(\pi + \alpha) \operatorname{tg}(\pi + \alpha)$
47	$1 + \operatorname{tg} \alpha = \operatorname{tg} \alpha [1 + \operatorname{ctg}(\pi + \alpha)]$
48	$\operatorname{ctg}(\pi + \alpha) + \operatorname{tg} \alpha = \frac{1}{\operatorname{sen}(\pi + \alpha) \cos(\pi + \alpha)}$
49	$\operatorname{ctg}^2(\pi + \alpha) = \frac{1 + \operatorname{ctg}^2(\pi + \alpha)}{1 + \operatorname{tg}^2(\pi + \alpha)}$
50	$\frac{\operatorname{sec}^2(\pi + \alpha)}{\operatorname{cosec}(\pi + \alpha)} = [\operatorname{tg}(\pi + \alpha) + \operatorname{ctg} \alpha] \frac{\operatorname{sec}(\pi + \alpha)}{\operatorname{cosec}^2 \alpha}$
51	$\operatorname{cosec}(2\pi - \alpha) = -\cos(2\pi - \alpha) \operatorname{ctg} \alpha - \operatorname{sen} \alpha$
52	$\operatorname{sen}(2\pi - \alpha) \operatorname{ctg}(2\pi - \alpha) + 1 = -\frac{\operatorname{sen} \alpha + \operatorname{tg} \alpha}{\operatorname{tg}(2\pi - \alpha)}$
53	$\frac{\cos(2\pi - \alpha)}{1 + \operatorname{sen}(2\pi - \alpha)} = \frac{1 - \operatorname{sen}(2\pi - \alpha)}{\cos(2\pi - \alpha)}$
54	$\operatorname{sen}(2\pi - \alpha) \operatorname{tg}(2\pi - \alpha) = \operatorname{sec}(2\pi - \alpha) - \cos(2\pi - \alpha)$
55	$\frac{\operatorname{sen}(2\pi - \alpha)}{\operatorname{sec}^2(2\pi - \alpha)} = \frac{\cos(2\pi - \alpha)}{\operatorname{ctg}(2\pi - \alpha) + \operatorname{tg}(2\pi - \alpha)}$
56	$-\operatorname{ctg} \alpha = \frac{\operatorname{sen}(2\pi - \alpha)}{1 - \cos(-\alpha)} - \operatorname{cosec}(2\pi - \alpha)$
57	$\frac{1 + \operatorname{tg}^2(-\alpha)}{1 - \operatorname{tg}^2(2\pi - \alpha)} = \frac{1}{2 \cos^2(-\alpha) - 1}$
58	$\frac{\cos(2\pi - \alpha)}{1 - \operatorname{sen}(-\alpha)} = \operatorname{tg}(-\alpha) + \operatorname{sec}(2\pi - \alpha)$
59	$\frac{\cos(\pi - \alpha)}{\operatorname{sen}(\pi + \alpha)} = \operatorname{cotg} \alpha$
60	$\frac{\operatorname{tg}(2\pi - \alpha)}{\operatorname{sen}(\pi - \alpha)} - \cos(\pi + \alpha) = -\frac{\operatorname{tg} \alpha}{\operatorname{cosec} \alpha}$

## Identità goniometriche

61	$\frac{\cotg(2\pi + \alpha)\operatorname{tg}(\pi + \alpha)}{\operatorname{sen}(2\pi - \alpha)\cos(\pi + \alpha)} = \sec \alpha \operatorname{cosec} \alpha$
62	$\frac{\operatorname{sen}(\pi + \alpha) - \operatorname{sen} \alpha}{\operatorname{cosec} \alpha - \operatorname{cosec}(\pi + \alpha)} = \cos^2 \alpha - 1$
63	$\frac{\operatorname{sen} \alpha + \operatorname{tg}(\pi - \alpha)}{\cotg(\pi - \alpha) + \cos(\pi + \alpha)} = \operatorname{tg}^2 \alpha \frac{1 - \cos \alpha}{1 + \operatorname{sen} \alpha}$
64	$\frac{\operatorname{sen}(2\pi + \alpha)\cotg(\pi + \alpha)}{\cos(\pi - \alpha)} = \cos(2\pi - \alpha)\operatorname{tg}(2\pi + \alpha)\operatorname{cosec}(\pi + \alpha)$
65	$\operatorname{cosec}(\pi + \alpha) - \sec(2\pi - \alpha) = \operatorname{cosec}(\pi - \alpha)\sec(\alpha)(\operatorname{sen}(\pi + \alpha) + \cos(\pi - \alpha))$
66	$\frac{\operatorname{tg}(2\pi - \alpha) - \sec(\pi + \alpha)}{\operatorname{tg}(3\pi + \alpha) - \sec(\alpha - 2\pi)} = -\frac{1 + \cotg^2 \alpha}{\operatorname{cosec}^2 \alpha}$
67	$\frac{\cos(3\pi - \alpha) - \sec(\alpha - 2\pi)}{\operatorname{tg}(7\pi + \alpha) - \cotg(-\pi - \alpha)} = \operatorname{sen}(3\pi - \alpha)(\operatorname{sen}^2 \alpha - 2)$
68	$\frac{\cos^3\left(\frac{\pi}{2} - \alpha\right) - \operatorname{sen}^3\left(\frac{\pi}{2} + \alpha\right)}{\operatorname{sen}(\pi - \alpha) - \operatorname{sen}\left(\frac{\pi}{2} - \alpha\right)} = \operatorname{sen} \alpha (\cos(2\pi - \alpha) + \operatorname{cosec} \alpha)$
69	$\frac{\cos^2(\pi - \alpha) - \cos^2\left(\frac{\pi}{2} + \alpha\right)}{\operatorname{sen}\left(\frac{\pi}{2} + \alpha\right) + \cos\left(\frac{\pi}{2} + \alpha\right)} = \frac{1 + \operatorname{tg}(\pi + \alpha)}{\sec(4\pi - \alpha)}$
70	$(1 + \operatorname{tg}^2(3\pi - \alpha))\left(\operatorname{sen}^2\left(\frac{\pi}{2} + \alpha\right) - \cos^2\left(3\frac{\pi}{2} - \alpha\right)\right) = 2 - \sec^2(\pi + \alpha)$
71	$\frac{a^2 \cos(2\pi - \alpha) - b^2 \operatorname{sen}\left(\frac{\pi}{2} + \alpha\right)}{a \operatorname{tg}(\pi - \alpha) + b \cotg\left(\frac{\pi}{2} - \alpha\right)} = (a + b)\left(\cos\left(\frac{\pi}{2} - \alpha\right) - \operatorname{cosec} \alpha\right), a \neq b$
72	$\frac{b^3 \cos(\pi - \alpha) + a^3 \operatorname{sen}\left(3\frac{\pi}{2} - \alpha\right)}{a^2 \cotg(\pi + \alpha) - b^2 \operatorname{tg}\left(\frac{\pi}{2} + \alpha\right) + ab \cotg(3\pi - \alpha)} = \frac{a + b}{\sec\left(3\frac{\pi}{2} - \alpha\right)}$
73	$\frac{(a + b)^2 \operatorname{tg}(2\pi - \alpha) + 4ab \cotg\left(\frac{\pi}{2} - \alpha\right)}{a \operatorname{tg}\left(\frac{\pi}{2} - \alpha\right) + b \operatorname{tg}\left(\frac{\pi}{2} + \alpha\right)} = (b - a) \frac{\operatorname{sen}^2(\pi - \alpha)}{1 - \cos^2\left(\frac{\pi}{2} + \alpha\right)}$
74	$\frac{a^4 \sec\left(\frac{3\pi}{2} + \alpha\right) + b^4 \sec\left(\frac{3\pi}{2} - \alpha\right)}{(a - b)^2 \sec(\pi - \alpha) - 2ab \operatorname{cosec}\left(\frac{\pi}{2} + \alpha\right)} = (a^2 - b^2) \operatorname{tg}\left(\frac{\pi}{2} + \alpha\right)$

## risolubili mediante formule goniometriche

75	$\operatorname{sen}(\alpha + \beta) \operatorname{sen}(\alpha - \beta) = \operatorname{sen}^2 \alpha - \operatorname{sen}^2 \beta$
76	$\operatorname{sen} \alpha \cos(\alpha + \beta) = \cos \alpha \operatorname{sen}(\alpha + \beta) - \operatorname{sen} \beta$
77	$\operatorname{sen} \alpha \operatorname{sen}(\alpha - \beta) + \cos \alpha \cos(\alpha - \beta) = \cos \beta$

78	$\frac{\cos(\alpha + \beta) + \cos(\alpha - \beta)}{\sin(\alpha + \beta) + \sin(\alpha - \beta)} = \operatorname{ctg} \alpha$
79	$\frac{\cos(\alpha - \beta)}{\cos(\alpha + \beta)} = \frac{1 + \operatorname{tg} \alpha \operatorname{tg} \beta}{1 - \operatorname{tg} \alpha \operatorname{tg} \beta}$
80	$\cos(\alpha - \beta) = (\operatorname{tg} \alpha + \operatorname{ctg} \beta) \sin \beta \cos \alpha$
81	$(\operatorname{tg} \alpha + \operatorname{tg} \beta)[\cos(\alpha + \beta) + \cos(\alpha - \beta)] = 2 \sin(\alpha + \beta)$
82	$\sin 11\alpha - \sin \alpha = 2 \cos 6\alpha \sin 5\alpha$
83	$\frac{\cos 4\alpha - \cos 8\alpha}{\cos 4\alpha + \cos 8\alpha} = \operatorname{tg} 6\alpha \operatorname{tg} 2\alpha$
84	$2 \cos 2\alpha \cos 3\alpha = \cos 5\alpha + \cos \alpha$
85	$\frac{\sin 3\alpha + \sin \alpha}{\sin 5\alpha - \sin \alpha} = \cos \alpha \sec 3\alpha$
86	$\cos^2 4\alpha = \cos^2 2\alpha - \sin 6\alpha \sin 2\alpha$
87	$2 \sin 3\alpha \sin 8\alpha = \cos 5\alpha - \cos 11\alpha$
88	$\cos^4 \alpha - \sin^4 \alpha = \cos 2\alpha$
89	$2 \cos 2\alpha = (1 - \cos 2\alpha)(\operatorname{ctg}^2 \alpha - 1)$
90	$2 \sin 2\alpha \cos \alpha - \sin 3\alpha = \sin \alpha$
91	$\frac{\sin 3\alpha - \sin \alpha}{\cos \alpha - \cos 3\alpha} = \operatorname{ctg} 2\alpha$
92	$2 \sin^2 \frac{\alpha}{2} \operatorname{tg} \alpha = \operatorname{tg} \alpha - \sin \alpha$
93	$2 \cos^2 \frac{\alpha}{2} - \cos \alpha = 1$
94	$2 \cos \alpha = (1 - \cos \alpha) \left( \operatorname{ctg}^2 \frac{\alpha}{2} - 1 \right)$
95	$\cos(\alpha + \beta) - \cos(\alpha - \beta) = -2 \sin \alpha \sin \beta$
96	$\sin(\alpha + \beta) + \sin(\alpha - \beta) = 2 \sin \alpha \cos \beta$
97	$\sin(\alpha - \beta) - \cos(\alpha + \beta) = (\sin \alpha - \cos \alpha)(\cos \beta + \sin \beta)$
98	$\sin^2(\alpha + \beta) - \cos^2(\alpha - \beta) = (1 - 2 \sin^2 \beta)(2 \sin^2 \alpha - 1)$

## Identità goniometriche

99	$\frac{\cos(\alpha + \beta)}{\sin(\alpha - \beta) + \sin(\alpha + \beta)} = \frac{1}{2}(\cotg \alpha - tg \beta)$
100	$\sin(\alpha + \beta)\sin(\alpha - \beta) = \sin^2 \alpha - \sin^2 \beta$
101	$tg(\alpha - \beta) + tg(\alpha + \beta) = \frac{\sin 2\alpha}{\cos^2 \beta - \sin^2 \alpha}$
102	$\frac{tg(\alpha + \beta)}{\cotg(\alpha - \beta)} = \frac{\sin^2 \alpha - \sin^2 \beta}{\cos^2 \beta - \sin^2 \alpha}$
103	$\frac{\cotg(\alpha - \beta)}{\sec(\alpha + \beta)} = \frac{\cos^2 \beta - \sin^2 \alpha}{\sin \alpha \cos \beta - \sin \beta \cos \alpha}$
104	$\frac{\cos(\alpha - \beta)}{\operatorname{cosec}(\alpha + \beta)} = \sin \alpha \cos \alpha + \sin \beta \cos \beta$
105	$\cos 2\alpha - \sin 2\alpha = (\cos \alpha - \sin \alpha)^2 - 2\sin^2 \alpha$
106	$\sin 2\alpha = 2 \frac{tg \alpha}{\sec^2 \alpha}$
107	$\cos \alpha \sin 2\alpha - \cos 2\alpha \sin \alpha = \sin \alpha$
108	$\frac{\cos(\alpha + \beta) + \cos(\alpha - \beta)}{2} = \cos \alpha \cos \beta$
109	$tg 2\alpha(\cos \alpha - \sin \alpha) = \frac{2}{\operatorname{cosec} \alpha + \sec \alpha}$
110	$\frac{\sin 2\alpha \sec \alpha \operatorname{cosec} \alpha}{2} = 1$
111	$\sec 2\alpha \cotg 2\alpha + \operatorname{cosec} 2\alpha \sin^2 \alpha = \sec \alpha \operatorname{cosec} \alpha - \frac{1}{2} \cotg \alpha$
112	$1 - \cos^2 2\alpha = 4tg^2 \alpha \cos^4 \alpha$
113	$\frac{1}{2}tg 2\alpha + \cotg \alpha = \frac{\cotg \alpha \cos^2 \alpha}{\cos 2\alpha}$
114	$\cos^2 \alpha + \cos 2\alpha = \cos^2 \alpha (2 - tg^2 \alpha)$

## di riepilogo

115	$\frac{1}{\operatorname{cosec} \alpha} + \frac{1 - \sin \alpha \cos \alpha}{\cos \alpha} = \frac{tg \alpha}{\sin \alpha}$
116	$\sin \alpha \cos \alpha \operatorname{cosec} \alpha + \sec \alpha = \frac{2 - \sin^2 \alpha}{\cos \alpha}$
117	$tg \alpha + \sin^2 \alpha = \frac{\sec \alpha (1 - \cos^2 \alpha)}{\sin \alpha} + \frac{\cos^2 \alpha - \cos^4 \alpha}{1 - \sin^2 \alpha}$
118	$\frac{1}{\operatorname{ctg} \alpha} - \frac{1}{tg \alpha} = \frac{2 \sin^2 \alpha - 1}{\sin \alpha \cos \alpha}$

119	$\operatorname{sen} \alpha = \frac{\operatorname{tg} \alpha}{\pm \sqrt{1 + \operatorname{tg}^2 \alpha}}$
120	$\cos \alpha = \pm \frac{\sqrt{\operatorname{cosec}^2 \alpha - 1}}{\operatorname{cosec} \alpha}$
121	$\frac{2 \operatorname{sen}^2(\pi - \alpha) - 1}{\operatorname{sen} \alpha \cos(2\pi - \alpha)} + \cos(-\alpha) \operatorname{cosec}(\pi - \alpha) = \frac{1}{\operatorname{ctg}(\pi + \alpha)}$
122	$1 + 2 \operatorname{sen}(2\pi - \alpha) \cos(\pi + \alpha) = [\operatorname{sen}(\pi - \alpha) - \cos(\pi + \alpha)]^2$
123	$\frac{1 + \cos(\pi + \alpha)}{\operatorname{sen}(2\pi - \alpha) \cos \alpha} = \operatorname{sen} \alpha - \operatorname{tg} \alpha - \frac{\cos(\pi + \alpha) + 1}{\operatorname{tg}(\pi + \alpha)}$
124	$[\operatorname{sen}(\pi - \alpha) - \cos(\pi - \alpha)]^2 = \frac{2 \operatorname{sen}(\pi - \alpha)}{\sec(2\pi - \alpha)} + 1$
125	$\frac{\operatorname{tg}(\pi + \alpha)}{1 - \operatorname{tg}^2(\pi - \alpha)} = \frac{\operatorname{ctg}(\pi + \alpha)}{\operatorname{ctg}^2(2\pi - \alpha) - 1}$
126	$-\operatorname{sen}^3(2\pi - \alpha) = \operatorname{tg}(\pi + \alpha)[\cos(-\alpha) + \cos^3(\pi - \alpha)]$
127	$\frac{\operatorname{sen} \alpha(1 + \operatorname{sen} \alpha) \operatorname{tg}(2\pi - \alpha)}{\operatorname{tg} \alpha} = \operatorname{sen}(\pi + \alpha) [1 - \operatorname{sen}(2\pi - \alpha)]$
128	$\frac{1}{2} \operatorname{sen} 2(\alpha + \beta) = \operatorname{sen}(\alpha + \beta) \cos(\alpha + \beta)$
129	$2 \operatorname{sen}(\alpha - \beta) \cos(\alpha + \beta) = \operatorname{sen} 2\alpha - \operatorname{sen} 2\beta$
130	$\cos^4 \frac{\alpha}{2} - \operatorname{sen}^4 \frac{\alpha}{2} = \cos \alpha$
131	$\operatorname{cosec} \alpha + \operatorname{ctg} \alpha = \operatorname{ctg} \frac{\alpha}{2}$
132	$\frac{2 \operatorname{sen} \alpha - \operatorname{sen} 2\alpha}{2 \operatorname{sen} \alpha + \operatorname{sen} 2\alpha} = \operatorname{tg}^2 \frac{\alpha}{2}$
133	$\frac{\operatorname{sen} 6\alpha + \operatorname{sen} 2\alpha + \cos 2\alpha}{\cos 6\alpha + 2 \cos 2\alpha} = \frac{2 \operatorname{tg} 4\alpha + \sec 4\alpha}{2 + \sec 4\alpha}$
134	$\frac{\operatorname{sen}(3\alpha + \beta) \operatorname{sen}(3\alpha - \beta) - \operatorname{sen}(\alpha + \beta) \operatorname{sen}(\alpha - \beta)}{\operatorname{sen} 4\alpha \operatorname{sen} 2\alpha} = 1$
135	$\frac{\cos \beta}{\operatorname{sen} \beta - \cos \alpha} - \frac{\cos \beta}{\operatorname{sen} \beta + \cos \alpha} = \frac{\cos \alpha}{\operatorname{sen} \alpha - \cos \beta} - \frac{\cos \alpha}{\operatorname{sen} \alpha + \cos \beta}$
136	$\operatorname{tg}^2 \alpha - \operatorname{sen}^2 \alpha = \operatorname{sen}^2 \alpha \operatorname{tg}^2 \alpha$
137	$\cos 3\alpha \sec \alpha = 4 \cos^2 \alpha - 3$
138	$\operatorname{sen} 3\alpha = \operatorname{sen}^3 \alpha (3 \operatorname{cosec}^2 \alpha - 4)$
139	$\frac{\sec(\pi - \alpha)}{2 \operatorname{sen}(-\alpha)} = \operatorname{cosec} 2\alpha$

140	$\frac{2\operatorname{sen}\left(\alpha + \frac{\pi}{6}\right)}{\operatorname{sen}\left(\frac{\pi}{2} - \alpha\right)} = \sqrt{3}\operatorname{tg}(3\pi + \alpha) + \operatorname{sec}\left(\frac{\pi}{2} + \alpha\right)\operatorname{sen}(\alpha - \pi)$
141	$\sqrt{2}\frac{\operatorname{sen}\frac{3}{4}\pi}{\operatorname{tg}(\pi + 2\alpha)} = -\operatorname{cotg}(-2\alpha)$
142	$\sqrt{2}\frac{\operatorname{sen}\left(\alpha + \frac{\pi}{4}\right)}{\operatorname{cos}(\alpha - 2\pi)} = 1 - \operatorname{tg}(-\alpha - 3\pi)$
143	$\operatorname{tg}\left(\alpha + \frac{\pi}{4}\right)(\operatorname{cos}(-\alpha) + \operatorname{sen}(-\alpha)) = \sqrt{2}\operatorname{cos}\left(\alpha - \frac{\pi}{4}\right)$
144	$\operatorname{sen}^4\alpha + \operatorname{cos}^4\alpha + \frac{1}{2}\operatorname{sen}^2 2\alpha = 1$
145	$\frac{1}{\operatorname{sen}(\pi - \alpha) + 1} - \frac{1}{\operatorname{sen}(\pi + \alpha) + 1} = \frac{\operatorname{sen} 2\alpha}{\operatorname{cos}^3(3\pi + \alpha)}$
146	$\operatorname{sec}^2\left(\frac{\pi}{2} + \alpha\right)\operatorname{cosec}^2\left(\alpha - \frac{\pi}{2}\right) = \frac{1 + \operatorname{cotg}^2\left(\frac{\pi}{2} + \alpha\right)}{1 - \operatorname{cos}^2(n\pi + \alpha)}$
147	$(\operatorname{cos}(2\pi - \alpha) - \operatorname{sen}(\pi + \alpha))^2 - \frac{2}{1 + \operatorname{cotg}^2\alpha} = \operatorname{cos} 2\alpha + \operatorname{sen} 2\alpha$
148	$\frac{\operatorname{cos}^2\alpha - \operatorname{cos}^2\left(\frac{3}{2}\pi + \alpha\right)}{1 + \operatorname{tg}(7\pi + \alpha)} = \frac{1 + \operatorname{cos} 2\alpha - \operatorname{sen} 2\alpha}{2}$
149	$\operatorname{cos}\left(\alpha - \frac{\pi}{3}\right) + \operatorname{cos}\left(\alpha - \frac{2}{3}\pi\right) = \operatorname{tg}\frac{\pi}{3}\operatorname{sen}\alpha$
150	$\frac{\sqrt{2}\operatorname{sen}\left(2\alpha + \frac{\pi}{4}\right) + 1}{2\left(\operatorname{cos}\left(\frac{\pi}{2} - \alpha\right) + \operatorname{sen}\left(\frac{\pi}{2} + \alpha\right)\right)} = \operatorname{cos}\alpha$
151	$\frac{1 + \operatorname{tg}(-\alpha)}{-1 + \operatorname{tg}(\pi - \alpha)} = \frac{\operatorname{cos}\left(\alpha + \frac{\pi}{4}\right)}{\operatorname{cos}\left(\alpha + 3\frac{\pi}{4}\right)}$
152	$\frac{\operatorname{cos}\left(\alpha - \frac{\pi}{3}\right) + \operatorname{sen}\left(\alpha + \frac{\pi}{3}\right)}{\sqrt{3} + 1} = \frac{\sqrt{2}}{2}\operatorname{sen}\left(\alpha + \frac{\pi}{4}\right)$
153	$\frac{\operatorname{cos}(\alpha - \beta) + \operatorname{cos}(\alpha + \beta)}{2\operatorname{sen}(\alpha + \beta)} = [\operatorname{tg}(\alpha + \beta)(1 - \operatorname{tg}\alpha\operatorname{tg}\beta)]^{-1}$