

## F1. Goniometria - Esercizi

TRASFORMARE GRADI IN RADIANTI.

1)	10°	55°	75°	88°	$[\frac{\pi}{18}, \frac{11}{36}\pi, \frac{5}{12}\pi, \frac{22}{45}\pi]$
2)	12°	80°	215°	410°	$[\frac{\pi}{15}, \frac{4}{9}\pi, \frac{43}{36}\pi, \frac{41}{18}\pi]$
3)	25°	100°	280°	520°	$[\frac{5}{36}\pi, \frac{5}{9}\pi, \frac{14}{9}\pi, \frac{26}{9}\pi]$
4)	72°	110°	310°	540°	$[\frac{2}{5}\pi, \frac{11}{18}\pi, \frac{31}{18}\pi, 3\pi]$
5)	48°	120°	325°	600°	$[\frac{4}{15}\pi, \frac{2}{3}\pi, \frac{65}{36}\pi, \frac{10}{3}\pi]$
6)	21°	140°	355°	700°	$[\frac{7}{60}\pi, \frac{7}{9}\pi, \frac{71}{36}\pi, \frac{35}{9}\pi]$
7)	81°	160°	24°	218°	$[\frac{9}{20}\pi, \frac{8}{9}\pi, \frac{2}{15}\pi, \frac{109}{90}\pi]$
8)	40°	290°	243°	92°	$[\frac{2}{9}\pi, \frac{29}{18}\pi, \frac{27}{20}\pi, \frac{23}{45}\pi]$

TRASFORMARE RADIANTI IN GRADI.

9)	$\frac{\pi}{10}$	$\frac{\pi}{18}$	$\frac{\pi}{5}$	$[18^\circ, 10^\circ, 36^\circ]$
10)	$\frac{\pi}{6}$	$\frac{\pi}{9}$	$\frac{\pi}{20}$	$[30^\circ, 20^\circ, 9^\circ]$
11)	$\frac{3}{10}\pi$	$\frac{5}{18}\pi$	$\frac{2}{5}\pi$	$[54^\circ, 50^\circ, 72^\circ]$
12)	$\frac{5}{6}\pi$	$\frac{4}{9}\pi$	$\frac{7}{20}\pi$	$[150^\circ, 80^\circ, 63^\circ]$
13)	$\frac{11}{10}\pi$	$\frac{23}{18}\pi$	$\frac{7}{5}\pi$	$[198^\circ, 230^\circ, 252^\circ]$
14)	$\frac{13}{6}\pi$	$\frac{11}{9}\pi$	$\frac{31}{20}\pi$	$[390^\circ, 220^\circ, 279^\circ]$
15)	$3\pi$	$\frac{5}{2}\pi$	$\frac{7}{3}\pi$	$[540^\circ, 450^\circ, 420^\circ]$
16)	$\frac{21}{4}\pi$	$\frac{13}{3}\pi$	$\frac{11}{2}\pi$	$[945^\circ, 780^\circ, 990^\circ]$
17)	$5\pi$	$\frac{3}{2}\pi$	$\frac{10}{3}\pi$	$[900^\circ, 270^\circ, 600^\circ]$
18)	$\frac{27}{4}\pi$	$\frac{16}{3}\pi$	$\frac{9}{2}\pi$	$[1215^\circ, 960^\circ, 810^\circ]$
19)	$4\pi$	$\frac{6}{5}\pi$	$\frac{3}{5}\pi$	$[720^\circ, 216^\circ, 108^\circ]$
20)	$\frac{11}{3}\pi$	$\frac{17}{5}\pi$	$\frac{7}{8}\pi$	$[660^\circ, 612^\circ, 157,5^\circ]$

TRASFORMARE DA GRADI CON LA VIRGOLA A GRADI PRIMI E SECONDI.

21)	10,46°	$[10^\circ 27' 36"]$
22)	31,52°	$[31^\circ 31' 12"]$
23)	125,96°	$[125^\circ 57' 36"]$
24)	87,13°	$[87^\circ 7' 48"]$
25)	342,666°	$[=342^\circ 39' 58"]$
26)	7,84°	$[7^\circ 50' 24"]$
27)	212,21°	$[212^\circ 12' 36"]$
28)	146,50°	$[146^\circ 30' 0"]$
29)	87,25°	$[87^\circ 15' 0"]$
30)	54,1°	$[54^\circ 6' 0"]$
31)	68,62°	$[68^\circ 37' 12"]$
32)	48,3°	$[48^\circ 18' 0"]$
33)	18,195°	$[18^\circ 11' 42"]$
34)	41,372°	$[=41^\circ 22' 19"]$
35)	71,675°	$[71^\circ 40' 30"]$

TRASFORMARE DA GRADI PRIMI E SECONDI A GRADI CON LA VIRGOLA.

36)	31° 12' 36"	$[31,21^\circ]$
37)	112° 38' 15"	$[112,6375^\circ]$

38)	219° 59' 06"	[219,985°]
39)	60° 30'	[60,5°]
40)	21° 38' 11"	[≈21,63638°]
41)	98° 42'	[98,7°]
42)	56° 52' 12"	[56,87°]
43)	135° 59' 30"	[≈135,9916°]
44)	76° 02' 45"	[≈76,04583°]
45)	181° 09' 36"	[181,16°]
46)	12° 12'	[12,2°]
47)	158° 44' 22"	[≈158,7394°]
48)	75° 32' 18"	[≈75,5383°]
49)	84° 24'	[84,4°]
50)	214° 16' 58"	[≈214,2827°]

DISEGNARE I SEGUENTI ANGOLI NELLA CIRCONFERENZA GONIOMETRICA E TRACCIARNE SENO, COSENO, TANGENTE E COTANGENTE; CALCOLARNE I VALORI CON LA CALCOLATRICE O CON LA TABELLA.

- 51) 135°
- 52) 90°
- 53) 225°
- 54)  $\frac{4}{3}\pi$
- 55)  $\frac{2}{3}\pi$
- 56)  $\frac{5}{3}\pi$
- 57)  $\frac{3}{2}\pi$
- 58)  $\frac{7}{4}\pi$
- 59) 15°
- 60) 30°
- 61)  $\frac{4}{9}\pi$
- 62) 110°
- 63)  $\frac{17}{18}\pi$
- 64)  $\frac{37}{36}\pi$
- 65) 200°
- 66) 230°
- 67)  $\frac{14}{9}\pi$
- 68) 310°
- 69)  $\frac{71}{36}\pi$
- 70) 150°

CONOSCENDO IL VALORE DI UNA FUNZIONE GONIOMETRICA E IL QUADRANTE TROVARE LE ALTRE FUNZIONI GONIOMETRICHE.

71)	$\text{sen} a = \frac{1}{3}$	$0^\circ < a < 90^\circ$	$[\text{cosa} = \frac{2\sqrt{2}}{3}, \text{tga} = \frac{\sqrt{2}}{4}, \text{cotga} = 2\sqrt{2}]$
72)	$\text{sen} a = \frac{1}{4}$	$0^\circ < a < 90^\circ$	$[\text{cosa} = \frac{\sqrt{15}}{4}, \text{tga} = \frac{\sqrt{15}}{15}, \text{cotga} = \sqrt{15}]$
73)	$\text{sen} a = \frac{2}{3}$	$90^\circ < a < 180^\circ$	$[\text{cosa} = -\frac{\sqrt{5}}{3}, \text{tga} = -\frac{2\sqrt{5}}{5}, \text{cotga} = -\frac{\sqrt{5}}{2}]$
74)	$\text{sen} a = \frac{3}{5}$	$90^\circ < a < 180^\circ$	$[\text{cosa} = -\frac{4}{5}, \text{tga} = -\frac{3}{4}, \text{cotga} = -\frac{4}{3}]$
75)	$\text{sen} a = -\frac{4}{5}$	$180^\circ < a < 270^\circ$	$[\text{cosa} = -\frac{3}{5}, \text{tga} = \frac{4}{3}, \text{cotga} = \frac{3}{4}]$
76)	$\text{sen} a = -\frac{1}{5}$	$180^\circ < a < 270^\circ$	$[\text{cosa} = -\frac{2\sqrt{6}}{5}, \text{tga} = \frac{\sqrt{6}}{12}, \text{cotga} = 2\sqrt{6}]$
77)	$\text{sen} a = -\frac{4}{3}$	$270^\circ < a < 360^\circ$	[?]
78)	$\text{sen} a = -\frac{\sqrt{3}}{2}$	$270^\circ < a < 360^\circ$	$[\text{cosa} = \frac{1}{2}, \text{tga} = -\sqrt{3}, \text{cotga} = -\frac{\sqrt{3}}{3}]$
79)	$\text{cosa} = \frac{2\sqrt{2}}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen} a = \frac{1}{3}, \text{tga} = \frac{\sqrt{2}}{4}, \text{cotga} = 2\sqrt{2}]$

80)	$\cos a = \frac{\sqrt{2}}{2}$	$0^\circ < a < 90^\circ$	$[\text{sen} a = \frac{\sqrt{2}}{2}, \text{tga} = 1, \text{cotga} = 1]$
81)	$\cos a = -\frac{1}{3}$	$90^\circ < a < 180^\circ$	$[\text{sen} a = \frac{2\sqrt{2}}{3}, \text{tga} = -2\sqrt{2}, \text{cotga} = -\frac{\sqrt{2}}{4}]$
82)	$\cos a = -\frac{3}{4}$	$90^\circ < a < 180^\circ$	$[\text{sen} a = \frac{\sqrt{7}}{4}, \text{tga} = -\frac{\sqrt{7}}{3}, \text{cotga} = -\frac{3\sqrt{7}}{7}]$
83)	$\cos a = -\frac{2}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen} a = -\frac{\sqrt{21}}{5}, \text{tga} = \frac{\sqrt{21}}{2}, \text{cotga} = \frac{2\sqrt{21}}{21}]$
84)	$\cos a = -\frac{6}{5}$	$180^\circ < a < 270^\circ$	[?]
85)	$\cos a = \frac{\sqrt{2}}{3}$	$270^\circ < a < 360^\circ$	$[\text{sen} a = -\frac{\sqrt{7}}{3}, \text{tga} = -\frac{\sqrt{14}}{2}, \text{cotga} = -\frac{\sqrt{14}}{7}]$
86)	$\cos a = \frac{\sqrt{3}}{3}$	$270^\circ < a < 360^\circ$	$[\text{sen} a = -\frac{\sqrt{6}}{3}, \text{tga} = -\sqrt{2}, \text{cotga} = \frac{1}{2}]$
87)	$\text{tga} = \frac{\sqrt{3}}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen} a = 1/2, \cos a = \frac{\sqrt{3}}{2}, \text{cotga} = -\frac{\sqrt{2}}{2}]$
88)	$\text{tga} = -3$	$90^\circ < a < 180^\circ$	$[\text{sen} a = \frac{3\sqrt{10}}{10}, \cos a = -\frac{\sqrt{10}}{10}, \text{cotga} = -\frac{1}{3}]$
89)	$\text{tga} = 2$	$180^\circ < a < 270^\circ$	$[\text{sen} a = -\frac{2\sqrt{5}}{5}, \cos a = -\frac{\sqrt{5}}{5}, \text{cotga} = \frac{1}{2}]$
90)	$\text{tga} = -\frac{2}{3}$ $\text{cotga} = -\frac{3}{2}]$	$270^\circ < a < 360^\circ$	$[\text{sen} a = -\frac{2\sqrt{13}}{13}, \cos a = \frac{3\sqrt{13}}{13},$

SEMPLIFICARE LE SEGUENTI ESPRESSIONI USANDO I VALORI DELLA TABELLA.

91)	$\sin 180^\circ + \cos 90^\circ \cdot \cos 270^\circ$	[0]
92)	$3 \sin 90^\circ - \text{tg } 135^\circ + 2 \cos 60^\circ$	[5]
93)	$3 \sin 0^\circ + 2 \cos 270^\circ - \text{tg } 180^\circ + \text{cotg } 90^\circ$	[0]
94)	$3 \sin 90^\circ - 3 \cos 180^\circ - 2 \text{tg } 45^\circ - 4 \text{cotg } 225^\circ$	[0]
95)	$2 \cos 0^\circ + 5 \sin 270^\circ + 3 \text{tg } 225^\circ$	[0]
96)	$2 \text{tg } 60^\circ - 3 \cos 30^\circ + \sin 120^\circ$	$[\sqrt{3}]$
97)	$2 \cos 135^\circ + \sin 135^\circ + 3 \cos 315^\circ$	$[\sqrt{2}]$
98)	$2 \text{tg } 30^\circ \cdot 3 \cos 30^\circ - 2 \text{tg } 45^\circ$	[1]
99)	$\frac{-2}{\cos 150^\circ} + \frac{1}{\text{tg } 150^\circ} - \text{tg } 210^\circ$	[0]
100)	$2 \text{tg } 210^\circ + \text{cotg } 210^\circ - 5 \text{tg } 330^\circ$	$[\frac{10\sqrt{3}}{3}]$
101)	$\cos 30^\circ \cdot \cos 45^\circ - \sin 45^\circ \cdot \sin 90^\circ + \cos 90^\circ \cdot \sin 50^\circ$	$[\frac{\sqrt{6} - 2\sqrt{2}}{4}]$
102)	$\cos 0^\circ \cdot \text{tg } 45^\circ - \sin 135^\circ$	$[\frac{2 - \sqrt{2}}{2}]$

SEMPLIFICARE LE SEGUENTI ESPRESSIONI USANDO LE RELAZIONI FONDAMENTALI.

103)	$\frac{\cos^2 \alpha - \cos^2 \alpha \sin^2 \alpha + 1 + \sin^2 \alpha}{\sin^2 \alpha \cos^2 \alpha \sin^2 \alpha}$	$[\frac{2}{\sin^2 \alpha}]$
104)	$(1 - \text{tg} \alpha)^2 + (1 + \text{tg} \alpha)^2 - \frac{2}{1 - \sin^2 \alpha}$	[0]
105)	$\text{tg}^2 \alpha + 2 \text{tg} \alpha + 1$	$[\frac{1}{\cos^2 \alpha} + 2 \text{tg} \alpha]$
106)	$\frac{1}{1 + \cos \alpha} + \frac{1}{1 - \cos \alpha} - 2 \text{cotg}^2 \alpha$	[2]
107)	$\frac{(\cos \alpha - 1)^2 - \sin^2 \alpha}{2 \cos \alpha}$	$[\cos \alpha - 1]$
108)	$\sin^2 \alpha + \cos^2 \alpha - \text{tg}^2 \alpha$	$[\frac{\cos^2 \alpha - \sin^2 \alpha}{\cos^2 \alpha}]$
109)	$\frac{(\sin \alpha - 1)^2}{\sin \alpha \cos \alpha} + \frac{2}{\cos \alpha} + \text{cotg} \alpha$	$[\frac{2}{\sin \alpha \cos \alpha}]$
110)	$\text{tg}^2 \alpha + \text{cotg}^2 \alpha - \frac{1}{\sin \alpha \cos \alpha}$	$[-1 - 2 \sin \alpha \cos \alpha]$
111)	$\text{cotg}^2 \alpha \cdot \sin^2 \alpha - \cos^2 \alpha$	[0]
112)	$\text{tg} \alpha \cdot \frac{\cos \alpha}{\sin \alpha} - \frac{1}{1 + \cos \alpha} - \frac{1}{1 - \cos \alpha}$	$[\frac{\sin^2 \alpha - 2}{\sin^2 \alpha}]$

- 113)  $\frac{1}{\text{sen}\alpha-1} \cdot \frac{1}{\text{sen}\alpha+1} \cdot \text{cotg}^2\alpha + \frac{1}{\text{sen}^2\alpha}$  [0]  
 114)  $\frac{\text{cos}\alpha+1}{\text{sen}\alpha} + \frac{\text{sen}\alpha-1}{\text{cos}\alpha} - \frac{\text{cos}\alpha-\text{sen}\alpha}{\text{sen}\alpha\text{cos}\alpha}$  [ $\frac{1}{\text{sen}\alpha\text{cos}\alpha}$ ]  
 115)  $\text{tg}^2\alpha(1-\text{sen}^2\alpha)$  [ $\text{sen}^2\alpha$ ]  
 116)  $\text{tg}\alpha \cdot \text{cotg}\alpha$  [1]  
 117)  $\text{sen}^4\alpha + \frac{\text{cos}^6\alpha}{1-\text{sen}^2\alpha} + \frac{2\text{sen}^4\alpha\text{cos}^2\alpha}{1-\text{cos}^2\alpha}$  [1]

SEMPLIFICARE LE SEGUENTI ESPRESSIONI UTILIZZANDO GLI ARCHI ASSOCIATI.

- 118)  $-\text{sen}(180^\circ+\alpha)-2\text{sen}(180^\circ-\alpha)-3\text{sen}(-\alpha)$  [2sen $\alpha$ ]  
 119)  $\text{cos}(-\alpha)+2\text{cos}(180^\circ+\alpha)-5\text{cos}(180^\circ-\alpha)$  [4cos $\alpha$ ]  
 120)  $\text{tg}(180^\circ+\alpha)+3\text{tg}(-\alpha)+\text{tg}\alpha$  [-tg $\alpha$ ]  
 121)  $\text{sen}\alpha+\text{sen}(-\alpha)+\text{cos}\alpha+\text{cos}(-\alpha)$  [2cos $\alpha$ ]  
 122)  $\text{sen}(180^\circ-\alpha)+\text{cos}(180^\circ-\alpha)+\text{cos}\alpha$  [sen $\alpha$ ]  
 123)  $\text{sen}\alpha-2\text{cos}(90^\circ-\alpha)+\text{cos}(270^\circ+\alpha)$  [0]  
 124)  $\text{cos}(-\alpha)+3\text{sen}(90^\circ+\alpha)-2\text{sen}(90^\circ-\alpha)$  [2cos $\alpha$ ]  
 125)  $\text{tg}(180^\circ+\alpha)-\text{cotg}(180^\circ+\alpha)+2\text{tg}(90^\circ-\alpha)-\text{tg}\alpha$  [cotg $\alpha$ ]  
 126)  $2\text{sen}(180^\circ-\alpha)\cdot\text{cos}(180^\circ-\alpha)-(\text{sen}\alpha-\text{cos}\alpha)^2$  [-1]  
 127)  $\text{sen}\alpha\cdot\text{cos}(90^\circ-\alpha)+\text{cos}\alpha\cdot\text{sen}(90^\circ-\alpha)$  [1]  
 128)  $\text{sen}(180^\circ+\alpha)\cdot\text{tg}(90^\circ+\alpha)-\text{cos}\alpha\cdot\text{tg}(180^\circ+\alpha)$  [cos $\alpha$ -sen $\alpha$ ]  
 129)  $[\text{sen}\alpha+\text{cos}(-\alpha)]^2-2\text{sen}\alpha\text{cos}\alpha\text{tg}\alpha\text{cotg}\alpha$  [1]  
 130)  $\text{sen}(360^\circ-\alpha)\cdot\text{tg}(360^\circ-\alpha)+\text{cos}(360^\circ-\alpha)$  [1/cos $\alpha$ ]  
 131)  $\text{sen}(90^\circ+\alpha)\cdot\text{cos}(90^\circ+\alpha)\cdot\text{tg}(90^\circ+\alpha)$  [cos $^2\alpha$ ]  
 132)  $\text{sen}(-\alpha)\text{cotg}(-\alpha)+\text{cos}(-\alpha)\text{tg}(-\alpha)$  [cos $\alpha$ -sen $\alpha$ ]

CALCOLARE SENO, COSENO, E TANGENTE DEI SEGUENTI ANGOLI UTILIZZANDO LE FORMULE DI ADDIZIONE E SOTTRAZIONE.

- 133) 105° [sen $\alpha = \frac{\sqrt{6}+\sqrt{2}}{4}$  cos $\alpha = \frac{\sqrt{2}-\sqrt{6}}{4}$  tg $\alpha = -2-\sqrt{3}$ ] (105°=60°+45°)  
 134) 15° [sen $\alpha = \frac{\sqrt{6}-\sqrt{2}}{4}$  cos $\alpha = \frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = 2-\sqrt{3}$ ] (15°=60°-45°)  
 135) 165° [sen $\alpha = \frac{\sqrt{6}-\sqrt{2}}{4}$  cos $\alpha = -\frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = -2+\sqrt{3}$ ] (165°=120°+45°)  
 136) 195° [sen $\alpha = \frac{\sqrt{2}-\sqrt{6}}{4}$  cos $\alpha = -\frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = 2-\sqrt{3}$ ] (195°=240°-45°)  
 137) 40° [sen $\alpha \approx 0,643$  cos $\alpha \approx 0,766$  tg $\alpha \approx 0,839$ ] (40°=10°+30°)  
 138) 75° [sen $\alpha = \frac{\sqrt{6}+\sqrt{2}}{4}$  cos $\alpha = \frac{\sqrt{6}-\sqrt{2}}{4}$  tg $\alpha = 2+\sqrt{3}$ ] (75°=30°+45°)  
 139) 15° [sen $\alpha = \frac{\sqrt{6}-\sqrt{2}}{4}$  cos $\alpha = \frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = 2-\sqrt{3}$ ] (15°=45°-30°)  
 140) 345° [sen $\alpha = \frac{\sqrt{2}-\sqrt{6}}{4}$  cos $\alpha = \frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = -2+\sqrt{3}$ ] (345°=300°+45°)  
 141) 170° [sen $\alpha \approx 0,174$  cos $\alpha \approx -0,985$  tg $\alpha \approx 0,176$ ] (170°=120°+50°)  
 142) 255° [sen $\alpha = \frac{-\sqrt{6}-\sqrt{2}}{4}$  cos $\alpha = \frac{\sqrt{2}-\sqrt{6}}{4}$  tg $\alpha = 2+\sqrt{3}$ ] (255°=300°-45°)

CALCOLARE SENO, COSENO, E TANGENTE DEI SEGUENTI ANGOLI UTILIZZANDO LE FORMULE DI BISEZIONE.

- 143) 15° [sen $\alpha = \frac{1}{2}\sqrt{2-\sqrt{3}} = \frac{\sqrt{6}-\sqrt{2}}{4}$  cos $\alpha = \frac{1}{2}\sqrt{2+\sqrt{3}} = \frac{\sqrt{6}+\sqrt{2}}{4}$  tg $\alpha = 2-\sqrt{3}$ ] (15°=30°/2)  
 144) 22,5° [sen $\alpha = \frac{1}{2}\sqrt{2-\sqrt{2}}$  cos $\alpha = \frac{1}{2}\sqrt{2+\sqrt{2}}$  tg $\alpha = \sqrt{2}-1$ ] (22,5°=45°/2)  
 145) 9° [sen $\alpha = \sqrt{\frac{4-\sqrt{10+2\sqrt{5}}}{8}}$  cos $\alpha = \sqrt{\frac{4+\sqrt{10+2\sqrt{5}}}{8}}$  tangente non richiesta] (9°=18°/2)  
 146) 7,5° [sen $\alpha = \sqrt{\frac{4-\sqrt{6}-\sqrt{2}}{8}}$  cos $\alpha = \sqrt{\frac{4+\sqrt{6}+\sqrt{2}}{8}}$  tangente non richiesta] (7,5°=15°/2)  
 147) 67,5° [sen $\alpha = \frac{1}{2}\sqrt{2+\sqrt{2}}$  cos $\alpha = \frac{1}{2}\sqrt{2-\sqrt{2}}$  tg $\alpha = \sqrt{2}+1$ ] (67,5°=135°/2)  
 148) 100° [sen $\alpha \approx 0,985$  cos $\alpha \approx -0,174$  tg $\alpha \approx -5,671$ ] (100°=200°/2)

CALCOLARE SEN2 $\alpha$ , COS2 $\alpha$ , TG2 $\alpha$  CONOSCENDO SEN $\alpha$  O COS $\alpha$  O TG $\alpha$ .

149)	$\text{sen}a = \frac{1}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen}2a = \frac{4}{9}\sqrt{2}, \text{cos}2a = \frac{7}{9}, \text{tg}2a = \frac{4}{7}\sqrt{2}]$
150)	$\text{sen}a = \frac{1}{4}$	$0^\circ < a < 90^\circ$	$[\text{sen}2a = \frac{\sqrt{15}}{8}, \text{cos}2a = \frac{7}{8}, \text{tg}2a = \frac{\sqrt{15}}{7}]$
151)	$\text{sen}a = \frac{2}{3}$	$90^\circ < a < 180^\circ$	$[\text{sen}2a = -\frac{4}{9}\sqrt{5}, \text{cos}2a = \frac{1}{9}, \text{tg}2a = -4\sqrt{5}]$
152)	$\text{sen}a = \frac{3}{5}$	$90^\circ < a < 180^\circ$	$[\text{sen}2a = -\frac{24}{25}, \text{cos}2a = \frac{7}{25}, \text{tg}2a = -\frac{24}{7}]$
153)	$\text{sen}a = -\frac{4}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen}2a = \frac{24}{25}, \text{cos}2a = -\frac{7}{25}, \text{tg}2a = -\frac{24}{7}]$
154)	$\text{sen}a = -\frac{1}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen}2a = -\frac{4}{25}\sqrt{6}, \text{cos}2a = \frac{23}{25}, \text{tg}2a = \frac{4}{23}\sqrt{6}]$
155)	$\text{sen}a = -\frac{5}{3}$	$270^\circ < a < 360^\circ$	[?]
156)	$\text{sen}a = -\frac{\sqrt{3}}{2}$	$270^\circ < a < 360^\circ$	$[\text{sen}2a = -\frac{\sqrt{3}}{2}, \text{cos}2a = -\frac{1}{2}, \text{tg}2a = \sqrt{3}]$
157)	$\text{cos}a = \frac{2\sqrt{2}}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen}2a = \frac{4}{9}\sqrt{2}, \text{cos}2a = \frac{7}{9}, \text{tg}2a = \frac{4}{7}\sqrt{2}]$
158)	$\text{cos}a = \frac{\sqrt{2}}{2}$	$0^\circ < a < 90^\circ$	$[\text{sen}2a = 1, \text{cos}2a = 0, \text{la tg}2a \text{ non esiste}]$
159)	$\text{cos}a = -\frac{1}{3}$	$90^\circ < a < 180^\circ$	$[\text{sen}2a = -\frac{4}{9}\sqrt{2}, \text{cos}2a = -\frac{7}{9}, \text{tg}2a = \frac{4}{7}\sqrt{2}]$
160)	$\text{cos}a = -\frac{3}{4}$	$90^\circ < a < 180^\circ$	$[\text{sen}2a = -\frac{3}{8}\sqrt{7}, \text{cos}2a = \frac{1}{8}, \text{tg}2a = -3\sqrt{7}]$
161)	$\text{cos}a = -\frac{2}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen}2a = \frac{4}{25}\sqrt{21}, \text{cos}2a = -\frac{17}{25}, \text{tg}2a = -\frac{4}{17}\sqrt{21}]$
162)	$\text{cos}a = 2$	$180^\circ < a < 270^\circ$	[?]
163)	$\text{cos}a = \frac{\sqrt{2}}{3}$	$270^\circ < a < 360^\circ$	$[\text{sen}2a = -\frac{2}{9}\sqrt{14}, \text{cos}2a = -\frac{5}{9}, \text{tg}2a = \frac{2}{5}\sqrt{14}]$
164)	$\text{cos}a = \frac{\sqrt{3}}{3}$	$270^\circ < a < 360^\circ$	$[\text{sen}2a = \frac{2\sqrt{2}}{3}, \text{cos}2a = -\frac{1}{3}, \text{tg}2a = -2\sqrt{2}]$
165)	$\text{tga} = \frac{\sqrt{3}}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen}2a = \frac{\sqrt{3}}{2}, \text{cos}2a = \frac{1}{2}, \text{tg}2a = \sqrt{3}]$
166)	$\text{tga} = -3$	$90^\circ < a < 180^\circ$	$[\text{sen}2a = -\frac{3}{5}, \text{cos}2a = -\frac{4}{5}, \text{tg}2a = \frac{3}{4}]$
167)	$\text{tga} = 2$	$180^\circ < a < 270^\circ$	$[\text{sen}2a = \frac{4}{5}, \text{cos}2a = -\frac{3}{5}, \text{tg}2a = -\frac{4}{3}]$
168)	$\text{tga} = -\frac{2}{3}$	$270^\circ < a < 360^\circ$	$[\text{sen}2a = -\frac{12}{13}, \text{cos}2a = \frac{5}{13}, \text{tg}2a = -\frac{12}{5}]$

CALCOLARE  $\text{sen}(\alpha/2)$ ,  $\text{cos}(\alpha/2)$ ,  $\text{tg}(\alpha/2)$  CONOSCENDO  $\text{sen}\alpha$  O  $\text{cos}\alpha$ .

169)	$\text{sen}a = \frac{1}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen}\frac{a}{2} = \frac{2\sqrt{3}-\sqrt{6}}{6}, \text{cos}\frac{a}{2} = \frac{2\sqrt{3}+\sqrt{6}}{6}, \text{tg}\frac{a}{2} = 3-2\sqrt{2}]$
170)	$\text{sen}a = \frac{1}{4}$	$0^\circ < a < 90^\circ$	$[\text{sen}\frac{a}{2} = \frac{\sqrt{5}-\sqrt{3}}{4}, \text{cos}\frac{a}{2} = \frac{\sqrt{5}+\sqrt{3}}{4}, \text{tg}\frac{a}{2} = 4-\sqrt{15}]$
171)	$\text{sen}a = \frac{2}{3}$	$90^\circ < a < 180^\circ$	$[\text{sen}\frac{a}{2} = \frac{\sqrt{15}+\sqrt{3}}{6}, \text{cos}\frac{a}{2} = \frac{\sqrt{15}-\sqrt{3}}{6}, \text{tg}\frac{a}{2} = \frac{\sqrt{5}+3}{2}]$
172)	$\text{sen}a = \frac{3}{5}$	$90^\circ < a < 180^\circ$	$[\text{sen}\frac{a}{2} = \frac{3\sqrt{10}}{10}, \text{cos}\frac{a}{2} = \frac{\sqrt{10}}{10}, \text{tg}\frac{a}{2} = 3]$
173)	$\text{sen}a = -\frac{4}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen}\frac{a}{2} = \frac{2\sqrt{5}}{5}, \text{cos}\frac{a}{2} = -\frac{\sqrt{5}}{5}, \text{tg}\frac{a}{2} = -2]$
174)	$\text{sen}a = -\frac{1}{5}$	$180^\circ < a < 270^\circ$	$[\text{sen}\frac{a}{2} = \frac{\sqrt{30}+2\sqrt{5}}{10}, \text{cos}\frac{a}{2} = \frac{-\sqrt{30}+2\sqrt{5}}{10}, \text{tg}\frac{a}{2} = -2\sqrt{6}-5]$
175)	$\text{sen}a = 5$	$270^\circ < a < 360^\circ$	[?]
176)	$\text{sen}a = -\frac{\sqrt{3}}{2}$	$270^\circ < a < 360^\circ$	$[\text{sen}\frac{a}{2} = \frac{1}{2}, \text{cos}\frac{a}{2} = -\frac{\sqrt{3}}{2}, \text{tg}\frac{a}{2} = -\frac{\sqrt{3}}{3}]$
177)	$\text{cos}a = \frac{2\sqrt{2}}{3}$	$0^\circ < a < 90^\circ$	$[\text{sen}\frac{a}{2} = \frac{2\sqrt{3}-\sqrt{6}}{6}, \text{cos}\frac{a}{2} = \frac{2\sqrt{3}+\sqrt{6}}{6}, \text{tg}\frac{a}{2} = 3-2\sqrt{2}]$
178)	$\text{cos}a = \frac{\sqrt{2}}{2}$	$0^\circ < a < 90^\circ$	$[\text{sen}\frac{a}{2} = \frac{1}{2}\sqrt{2-\sqrt{2}}, \text{cos}\frac{a}{2} = \frac{1}{2}\sqrt{2+\sqrt{2}}, \text{tg}\frac{a}{2} = \sqrt{2}-1]$
179)	$\text{cos}a = -\frac{1}{3}$	$90^\circ < a < 180^\circ$	$[\text{sen}\frac{a}{2} = \frac{\sqrt{6}}{3}, \text{cos}\frac{a}{2} = \frac{\sqrt{3}}{3}, \text{tg}\frac{a}{2} = \frac{\sqrt{2}}{2}]$

- 180)  $\cos a = -\frac{3}{4}$        $90^\circ < a < 180^\circ$        $[\sin \frac{a}{2} = \frac{\sqrt{14}}{4}, \cos \frac{a}{2} = \frac{\sqrt{2}}{4}, \operatorname{tg} \frac{a}{2} = \sqrt{7}]$
- 181)  $\cos a = -\frac{2}{5}$        $180^\circ < a < 270^\circ$        $[\sin \frac{a}{2} = \frac{\sqrt{70}}{10}, \cos \frac{a}{2} = -\frac{\sqrt{30}}{10}, \operatorname{tg} \frac{a}{2} = -\frac{\sqrt{21}}{3}]$
- 182)  $\cos a = -1$        $180^\circ \leq a < 270^\circ$        $[\sin \frac{a}{2} = 1, \cos \frac{a}{2} = 0, \operatorname{tg} \frac{a}{2} \text{ non c'è}]$
- 183)  $\cos a = \frac{\sqrt{2}}{3}$        $270^\circ < a < 360^\circ$        $[\sin \frac{a}{2} = \frac{\sqrt{18-6\sqrt{2}}}{6}, \cos \frac{a}{2} = -\frac{\sqrt{18+6\sqrt{2}}}{6}, \operatorname{tg} \frac{a}{2} = -\frac{\sqrt{7}}{7}(3-\sqrt{2})]$
- 184)  $\cos a = \frac{\sqrt{3}}{3}$        $270^\circ < a < 360^\circ$        $[\sin \frac{a}{2} = \frac{\sqrt{18-6\sqrt{3}}}{6}, \cos \frac{a}{2} = -\frac{\sqrt{18+6\sqrt{3}}}{6}, \operatorname{tg} \frac{a}{2} = -\frac{\sqrt{6}}{6}(3-\sqrt{3})]$

SEMPLIFICARE LE SEGUENTI ESPRESSIONI UTILIZZANDO ALCUNE FORMULE.

- 185)  $\sin(120^\circ - \alpha) - \sin(60^\circ + \alpha)$        $[0]$
- 186)  $\cos(30^\circ + \alpha) + \cos(\alpha - 150^\circ)$        $[0]$
- 187)  $\operatorname{tg}(\alpha + 225^\circ) \operatorname{tg}(\alpha - 225^\circ)$        $[-1]$
- 188)  $\cos(60^\circ + \alpha) \cdot \sin(60^\circ - \alpha) - \sin(60^\circ + \alpha) \cdot \cos(60^\circ - \alpha)$        $[-2\sin\alpha\cos\alpha]$
- 189)  $\sin(45^\circ + \alpha) - \cos(45^\circ - \alpha)$        $[0]$
- 190)  $\sin^2(\alpha + \beta) + (\cos\alpha\cos\beta)^2 + (\sin\alpha\sin\beta)^2$        $[2\sin\alpha\cos\alpha\sin\beta\cos\beta + 1]$
- 191)  $\cos^2(120^\circ - \alpha) + \sin(60^\circ + \alpha)$        $[1]$
- 192)  $\frac{(\sin(2\alpha))^2}{1 + \cos(2\alpha)}$        $[2\sin^2\alpha]$
- 193)  $\frac{\operatorname{tg}\alpha}{1 + \operatorname{tg}\alpha} + \frac{\operatorname{tg}\alpha}{1 - \operatorname{tg}\alpha} - \operatorname{tg}(2\alpha)$        $[0]$
- 194)  $\sin 2\alpha + (\cos\alpha - \sin\alpha)^2$        $[1]$
- 195)  $\left(\frac{1}{1 + \sin\alpha} + \frac{1}{1 - \sin\alpha}\right) \cdot \sin(2\alpha)$        $[4\operatorname{tg}\alpha]$
- 196)  $\frac{\sin\alpha}{\cos\alpha + \sin\alpha} - \frac{\cos\alpha}{\cos\alpha - \sin\alpha}$        $[\frac{-1}{\cos 2\alpha}]$
- 197)  $\frac{\sin 45^\circ \cdot \sin 2\alpha + \cos\alpha}{\cos 2\alpha}$        $[\frac{\cos\alpha}{1 - \sqrt{2}\sin\alpha}]$
- 198)  $\frac{(\sin\alpha - \cos\alpha)^2}{\sin 2\alpha} + 1$        $[\frac{1}{2\sin\alpha\cos\alpha}]$
- 199)  $\cos 2\alpha + \sin 2\alpha + 2\sin^2\alpha - (\cos\alpha + \sin\alpha)^2$        $[0]$
- 200)  $2\sin^2\frac{\alpha}{2} - (\sin\alpha + \cos\alpha)^2 + \sin 2\alpha$        $[-\cos\alpha]$
- 201)  $2\cos^2\frac{\alpha}{2} - (\sin\alpha - \cos\alpha)^2 - \cos\alpha$        $[2\sin\alpha\cos\alpha]$
- 202)  $\frac{(\cos\alpha - \sin\alpha)^2 - \cos 2\alpha}{2\sin\alpha}$        $[\sin\alpha - \cos\alpha]$
- 203)  $2\sin^2\frac{\alpha}{2} + \cos^2\frac{\alpha}{2}$        $[\frac{3 - \cos\alpha}{2}]$
- 204)  $\operatorname{tg}\frac{\alpha}{2} - \frac{\sin\alpha}{2\cos^2\frac{\alpha}{2}}$        $[0]$
- 205)  $\operatorname{tg}\frac{\alpha}{2} \cdot \sin\alpha - 2\sin^2\frac{\alpha}{2}$        $[0]$
- 206)  $\cos 15^\circ + \cos 75^\circ$        $[\frac{\sqrt{6}}{2}]$
- 207)  $\sin 15^\circ + \sin 75^\circ$        $[\frac{\sqrt{6}}{2}]$
- 208)  $\cos 15^\circ - \cos 75^\circ$        $[\frac{\sqrt{2}}{2}]$
- 209)  $\sin 15^\circ - \sin 75^\circ$        $[-\frac{\sqrt{2}}{2}]$
- 210)  $\sin 105^\circ + \sin 15^\circ$        $[\frac{\sqrt{6}}{2}]$
- 211)  $\cos 105^\circ + \cos 15^\circ$        $[\frac{\sqrt{2}}{2}]$
- 212)  $\sin 105^\circ - \sin 15^\circ$        $[\frac{\sqrt{2}}{2}]$
- 213)  $\cos 105^\circ - \cos 15^\circ$        $[-\frac{\sqrt{6}}{2}]$
- 214)  $\sin 3\alpha = \sin(2\alpha + \alpha) = \dots$        $[\sin\alpha(3\cos^2\alpha - \sin^2\alpha)]$
- 215)  $\cos 3\alpha = \cos(2\alpha + \alpha) = \dots$        $[\cos\alpha(\cos^2\alpha - 3\sin^2\alpha)]$

216)	$\text{sen}4\alpha = \text{sen}(2\alpha+2\alpha) = \dots$	$[4\text{sen}\alpha\cos\alpha(\cos^2\alpha - \text{sen}^2\alpha)]$
217)	$\cos4\alpha = \cos(2\alpha+2\alpha) = \dots$	$[\cos^4\alpha + \text{sen}^4\alpha - 6\text{sen}^2\alpha\cos^2\alpha]$
218)	$\text{sen}5\alpha + \text{sen}3\alpha$	$[2\text{sen}4\alpha\cos\alpha]$
219)	$\text{sen}4\alpha + \text{sen}2\alpha$	$[2\text{sen}3\alpha\cos\alpha]$

UTILIZZARE LE FORMULE DI WERNER.

220)	$\cos75^\circ \cdot \cos15^\circ$	$[\frac{1}{4}]$
221)	$\text{sen}75^\circ \cdot \text{sen}15^\circ$	$[\frac{1}{4}]$
222)	$\text{sen}75^\circ \cdot \cos15^\circ$	$[\frac{2+\sqrt{3}}{4}]$
223)	$\cos75^\circ \cdot \text{sen}15^\circ$	$[\frac{2-\sqrt{3}}{4}]$
224)	$\cos105^\circ \cdot \cos75^\circ$	$[\frac{-2+\sqrt{3}}{4}]$
225)	$\text{sen}105^\circ \cdot \text{sen}75^\circ$	$[\frac{2+\sqrt{3}}{4}]$
226)	$\text{sen}105^\circ \cdot \cos75^\circ$	$[\frac{1}{4}]$
227)	$\cos105^\circ \cdot \text{sen}75^\circ$	$[-\frac{1}{4}]$
228)	$\text{sen}4\alpha\cos2\alpha$	$[\frac{1}{2}\text{sen}2\alpha(1+\cos4\alpha+2\cos^22\alpha)]$

RISOLVERE LE SEGUENTI EQUAZIONI ELEMENTARI.

229)	$\text{sen} x = 0$	$[x = 0^\circ + k180^\circ]$
230)	$\text{sen} x = \frac{\sqrt{2}}{2}$	$[x_1 = 45^\circ + k360^\circ, x_2 = 135^\circ + k360^\circ]$
231)	$\text{sen} x = \frac{\sqrt{3}}{2}$	$[x_1 = 60^\circ + k360^\circ, x_2 = 120^\circ + k360^\circ]$
232)	$\text{sen} x = -1$	$[x = 270^\circ + k360^\circ]$
233)	$\cos x = 0$	$[x = 90^\circ + k180^\circ]$
234)	$\cos x = -\frac{1}{2}$	$[x_1 = 120^\circ + k360^\circ, x_2 = 240^\circ + k360^\circ]$
235)	$\cos x = -\frac{\sqrt{2}}{2}$	$[x_1 = 135^\circ + k360^\circ, x_2 = 225^\circ + k360^\circ]$
236)	$\cos x = 1$	$[x = 0^\circ + k360^\circ]$
237)	$\text{tg} x = \sqrt{3}$	$[x_1 = 60^\circ + k180^\circ]$
238)	$3\text{tg} x = -\sqrt{3}$	$[x = 150^\circ + k180^\circ]$
239)	$\text{tg} x - 1 = 0$	$[x = 45^\circ + k180^\circ]$
240)	$\text{cotg} x + 1 = 0$	$[x = 135^\circ + k180^\circ]$
241)	$2\text{sen} x = -\sqrt{2}$	$[x_1 = 225^\circ + k360^\circ, x_2 = 315^\circ + k360^\circ]$
242)	$2\cos x = 1$	$[x_1 = 60^\circ + k360^\circ, x_2 = 300^\circ + k360^\circ]$
243)	$5\text{sen} x = 1$	$[x_1 \approx 11,54^\circ + k360^\circ, x_2 \approx 168,46^\circ + k360^\circ]$
244)	$3\text{sen} x = 4$	[impossibile]
245)	$4\text{sen} x = 3$	$[x_1 \approx 48,59^\circ + k360^\circ, x_2 \approx 131,41^\circ + k360^\circ]$
246)	$5\cos x = -3$	$[x_1 \approx 126,87^\circ + k360^\circ, x_2 \approx 233,13^\circ + k360^\circ]$
247)	$\text{tg} x = 2$	$[x_1 \approx 63,43^\circ + k180^\circ]$

RISOLVERE LE SEGUENTI EQUAZIONI RICONDUCEBILI AD ELEMENTARI.

248)	$\text{sen}(2x) = \frac{1}{2}$	$[x_1 = 15^\circ + k180^\circ, x_2 = 75^\circ + k180^\circ]$
249)	$\text{sen}(x+30^\circ) = \frac{\sqrt{3}}{2}$	$[x_1 = 30^\circ + k360^\circ, x_2 = 90^\circ + k360^\circ]$
250)	$\text{sen}(\frac{x}{2}) = 1$	$[x = 180^\circ + k720^\circ]$
251)	$\text{sen}(\frac{2}{3}x) = -\frac{\sqrt{2}}{2}$	$[x_1 = 337,5^\circ + k540^\circ, x_2 = 112,5^\circ + k540^\circ]$
252)	$\cos(2x) = -1$	$[x = 90^\circ + k180^\circ]$
253)	$\cos(x+60^\circ) = -\frac{1}{2}$	$[x_1 = 60^\circ + k360^\circ, x_2 = 180^\circ + k360^\circ]$

- 254)  $\cos\left(\frac{x}{2}\right)=\frac{\sqrt{3}}{2}$   $[x_1=60^\circ+k720^\circ, x_2=300^\circ+k720^\circ]$
- 255)  $\cos\left(\frac{3}{2}x\right)=\frac{\sqrt{2}}{2}$   $[x_1=30^\circ+k240^\circ, x_2=210^\circ+k240^\circ]$
- 256)  $\operatorname{tg}(2x)=\sqrt{3}$   $[x=30^\circ+k90^\circ]$
- 257)  $\operatorname{tg}\left(\frac{x}{2}\right)=-1$   $[x=270^\circ+k360^\circ]$
- 258)  $\operatorname{tg}(x+30^\circ)=\frac{\sqrt{3}}{3}$   $[x=0^\circ+k180^\circ]$
- 259)  $\operatorname{tg}\left(\frac{3}{4}x\right)=0$   $[x=0^\circ+k240^\circ]$
- 260)  $4\operatorname{sen}^2x-1=0$   $[x_1=30^\circ+k180^\circ, x_2=150^\circ+k180^\circ]$
- 261)  $4\operatorname{sen}^2x-(2\sqrt{3}+2\sqrt{2})\operatorname{sen}x+\sqrt{6}=0$   $[x_1=45^\circ+k360^\circ, x_2=60^\circ+k360^\circ, x_3=120^\circ+k360^\circ, x_4=135^\circ+k360^\circ]$
- 262)  $2\operatorname{sen}^2x-(1+\sqrt{2})\operatorname{sen}x+\sqrt{2}=0$   $[x_1=30^\circ+k360^\circ, x_2=45^\circ+k360^\circ, x_3=135^\circ+k360^\circ, x_4=150^\circ+k360^\circ]$
- 263)  $2\operatorname{sen}^2x-(\sqrt{2}-2)\operatorname{sen}x-\sqrt{2}=0$   $[x_1=45^\circ+k360^\circ, x_2=135^\circ+k360^\circ, x_3=270^\circ+k360^\circ]$
- 264)  $2\cos^2x-\cos x-1=0$   $[x_1=0^\circ+k120^\circ]$
- 265)  $2\cos^2x-3\cos x+1=0$   $[x_1=60^\circ+k360^\circ, x_2=300^\circ+k360^\circ, x_3=0^\circ+k360^\circ]$
- 266)  $2\cos^2x-\sqrt{3}\cos x=0$   $[x_1=90^\circ+k180^\circ, x_2=30^\circ+k360^\circ, x_3=330^\circ+k360^\circ]$
- 267)  $\cos^2x-\cos x=0$   $[x_1=90^\circ+k180^\circ, x_2=0^\circ+k360^\circ]$
- 268)  $2\cos^2x-1=0$   $[x=45^\circ+k90^\circ]$
- 269)  $\operatorname{sen}^2x-\operatorname{sen}x-2=0$   $[x=270^\circ+k360^\circ]$
- 270)  $\operatorname{sen}^2x-4=0$   $[\text{impossibile}]$
- 271)  $4\operatorname{sen}^2x-8\operatorname{sen}x+3=0$   $[x_1=30^\circ+k360^\circ, x_2=150^\circ+k360^\circ]$
- 272)  $\operatorname{tg}^2x-3=0$   $[x_1=60^\circ+k180^\circ, x_2=120^\circ+k180^\circ]$
- 273)  $\operatorname{tg}^2x-1=0$   $[x=45^\circ+k90^\circ]$
- 274)  $3\operatorname{tg}^2x-(\sqrt{3}+3)\operatorname{tg}x-\sqrt{3}=0$   $[x_1=30^\circ+k180^\circ, x_2=45^\circ+k180^\circ]$
- 275)  $\operatorname{tg}^2x-\operatorname{tg}x=0$   $[x_1=0^\circ+k180^\circ, x_2=45^\circ+k180^\circ]$
- 276)  $\operatorname{sen}^2x-\cos^2x=0$   $[x=45^\circ+k90^\circ]$
- 277)  $-2\cos^2x-3\operatorname{sen}x+3=0$   $[x_1=30^\circ+k360^\circ, x_2=90^\circ+k360^\circ, x_3=150^\circ+k360^\circ]$
- 278)  $\cos x-\operatorname{sen}^2x+1=0$   $[x_1=90^\circ+k180^\circ, x_2=180^\circ+k360^\circ]$
- 279)  $\cos^2x+\operatorname{sen}x+1=0$   $[x=270^\circ+k360^\circ]$

RISOLVERE LE SEGUENTI EQUAZIONI LINEARI.

- 280)  $\operatorname{sen}x-\cos x=0$   $[x=45^\circ+k180^\circ]$
- 281)  $\operatorname{sen}x+\sqrt{3}\cos x=0$   $[x=120^\circ+k180^\circ]$
- 282)  $3\operatorname{sen}x+\sqrt{3}\cos x=0$   $[x=150^\circ+k180^\circ]$
- 283)  $\sqrt{3}\operatorname{sen}x-\cos x=0$   $[x=30^\circ+k180^\circ]$
- 284)  $\operatorname{sen}x+\cos x=0$   $[x=135^\circ+k180^\circ]$
- 285)  $\operatorname{sen}x-3\cos x=0$   $[x=71,57^\circ+k180^\circ]$
- 286)  $\operatorname{sen}x+\cos x=1$   $[x_1=0^\circ+k360^\circ, x_2=90^\circ+k360^\circ]$
- 287)  $\operatorname{sen}x+\sqrt{3}\cos x=2$   $[x=30^\circ+k180^\circ]$
- 288)  $\operatorname{sen}x+\cos x=-\sqrt{2}$   $[x=225^\circ+k180^\circ]$
- 289)  $\operatorname{sen}x+\cos x+3=0$   $[\text{impossibile}]$
- 290)  $\cos x(\sqrt{2}+1)-\sqrt{2}\operatorname{sen}x-\sqrt{2}=0$   $[x_1=135^\circ+k360^\circ, x_2=270^\circ+k360^\circ]$
- 291)  $\sqrt{3}\operatorname{sen}x-\cos x=\sqrt{3}$   $[x_1=90^\circ+k360^\circ, x_2=150^\circ+k360^\circ]$
- 292)  $2\operatorname{sen}x+2\cos x=1-\sqrt{3}$   $[x_1=150^\circ+k360^\circ, x_2=300^\circ+k360^\circ]$
- 293)  $\operatorname{sen}x+\sqrt{3}\cos x=\sqrt{3}$   $[x_1=0^\circ+k360^\circ, x_2=60^\circ+k360^\circ]$
- 294)  $\operatorname{sen}x+\sqrt{3}\cos x+\sqrt{3}=0$   $[x_1=180^\circ+k360^\circ, x_2=240^\circ+k360^\circ]$

RISOLVERE LE SEGUENTI EQUAZIONI OMOGENEE.

- 295)  $\operatorname{sen}^2x+\sqrt{3}\cos^2x-(\sqrt{3}+1)\operatorname{sen}x\cos x=0$   $[x_1=45^\circ+k180^\circ, x_2=60^\circ+k180^\circ]$
- 296)  $3\operatorname{sen}^2x-\sqrt{3}\cos^2x+(3-\sqrt{3})\operatorname{sen}x\cos x=0$   $[x_1=30^\circ+k180^\circ, x_2=135^\circ+k180^\circ]$



- 297)  $\text{sen}^2x - \text{cos}^2x = 0$  [ $x=45^\circ+k90^\circ$ ]
- 298)  $1 - 4\text{sen}x\text{cos}x = 0$  [ $x_1=15^\circ+k180^\circ, x_2=75^\circ+k180^\circ$ ]
- 299)  $1 - 2\sqrt{2}\text{sen}x\text{cos}x = 0$  [ $x_1=22,5^\circ+k180^\circ, x_2=67,5^\circ+k180^\circ$ ]
- 300)  $\text{sen}^2x + (2\sqrt{3}-3)\text{cos}^2x - 2\text{sen}x\text{cos}x = 0$  [ $x_1=15^\circ+k180^\circ, x_2=60^\circ+k180^\circ$ ]
- 301)  $3\text{cos}^2x + \sqrt{3}\text{sen}x\text{cos}x = 0$  [ $x_1=90^\circ+k180^\circ, x_2=120^\circ+k180^\circ$ ]
- 302)  $\text{sen}x\text{cos}x - \sqrt{3}\text{cos}^2x = 0$  [ $x_1=60^\circ+k180^\circ, x_2=90^\circ+k180^\circ$ ]
- 303)  $\text{cos}^2x - \text{sen}x\text{cos}x = 0$  [ $x_1=45^\circ+k180^\circ, x_2=90^\circ+k180^\circ$ ]
- 304)  $(1-\sqrt{3})\text{cos}^2x + (\sqrt{3}-3)\text{sen}x\text{cos}x + 1 = 0$  [ $x_1=15^\circ+k180^\circ, x_2=45^\circ+k180^\circ$ ]
- 305)  $(3+\sqrt{2})\text{cos}^2x + \text{sen}^2x + \sqrt{2}\text{sen}x\text{cos}x - 2 = 0$  [ $x_1=67,5^\circ+k180^\circ, x_2=135^\circ+k180^\circ$ ]
- 306)  $3\text{sen}^2x - 3\text{cos}^2x - 2\sqrt{3}\text{sen}x\text{cos}x = 0$  [ $x=60^\circ+k90^\circ$ ]