

Formule per soluzione trigonometrica triangoli rettangoli

Con geogebra, derive, cabri, excel

Angolo

$\alpha = 90^\circ$

$\beta = 29.97^\circ$

$\gamma = 60.03^\circ$

Numero

$d = 0.87$

$e = 0.5$

$f = 0.5$

$g = 0.87$

$h = 0.87$

Punto

$A = (0, 0)$

$B = (0, 6)$

$C = (3.46, 0)$

Segmento

$a = 6.93$

$b = 3.46$

$c = 6$

 f_x G C

	A	B	C
1	'b/a	0.5	0.5
2	'b/a	0.5	0.5
3			
4	'c/a	0.87	0.87
5	'c/a	0.87	0.87
6			
7	'b	3.46	
8	'c	6	
9	'a	6.93	
10			
11	'beta	30°	
12	'gamma	60°	
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

N.	Nome	Definizione	Valore
33	Numero B8		B8 = 6
34	Testo A9		"a"
35	Numero B9		B9 = 6.93
36	Numero B1	B7 / B9	B1 = 0.5
37	Numero B2	B7 / B9	B2 = 0.5
38	Numero B4	B8 / B9	B4 = 0.87
39	Numero B5	B8 / B9	B5 = 0.87
40	Testo A11		"beta"
41	Testo A12		"gamma"
42	Angolo B11		B11 = 30°
43	Angolo B12		B12 = 60°
44	Numero C2	cos(B12)	C2 = 0.5
45	Numero C1	sin(B11)	C1 = 0.5
46	Numero C4	sin(B12)	C4 = 0.87
47	Numero C5	cos(B11)	C5 = 0.87

calcolo ipotenusa, cateti , in triangolo rettangolo

ipotenusa a, cateti b, c

pitagora

$b = a * \sin(\beta)$ Risultato: 6,01 cm

$b = a * \cos(\gamma)$ Risultato: 6,01 cm

$a = b / \sin(\beta)$ Risultato: 7,82 cm

$a = b / \cos(\gamma)$ Risultato: 7,82 cm

$a = \sqrt{b^2 + c^2}$ Risultato: 7,82 cm

$b = \sqrt{a^2 - c^2}$ Risultato: 6,01 cm

$c = \sqrt{a^2 - b^2}$ Risultato: 5,00 cm

$c = a * \sin(\gamma)$ Risultato: 5,00 cm

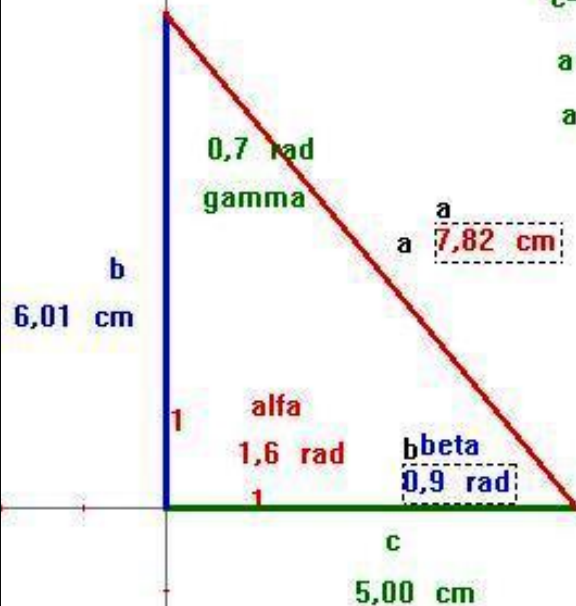
$c = a * \cos(\beta)$ Risultato: 5,00 cm

$a = c / \sin(\gamma)$ Risultato: 7,82 cm

$a = c / \cos(\beta)$ Risultato: 7,82 cm

$b = c * \tan(\beta)$ Risultato: 6,01 cm

$c = b * \tan(\gamma)$ Risultato: 5,00 cm



Calcolatrice

Stop Annulla $a * \sin(b)$ = 6,01 cm

inv sin cos tan sqrt ^ ln log abs pi () + - × /

calcolo come rapporto
cateto/ ipotenusa

$$b = a * \sin(\beta)$$
$$b = a * \cos(\gamma)$$

$$c = a \sin(\gamma)$$
$$c = a * \cos(\beta)$$

$$\sin(\beta) = b / a$$
$$\sin(\gamma) = c / a$$

Risultato: 0,55
Risultato: 0,83

$$\cos(\beta) = b / a$$
$$\cos(\gamma) = c / a$$

Risultato: 0,55
Risultato: 0,83

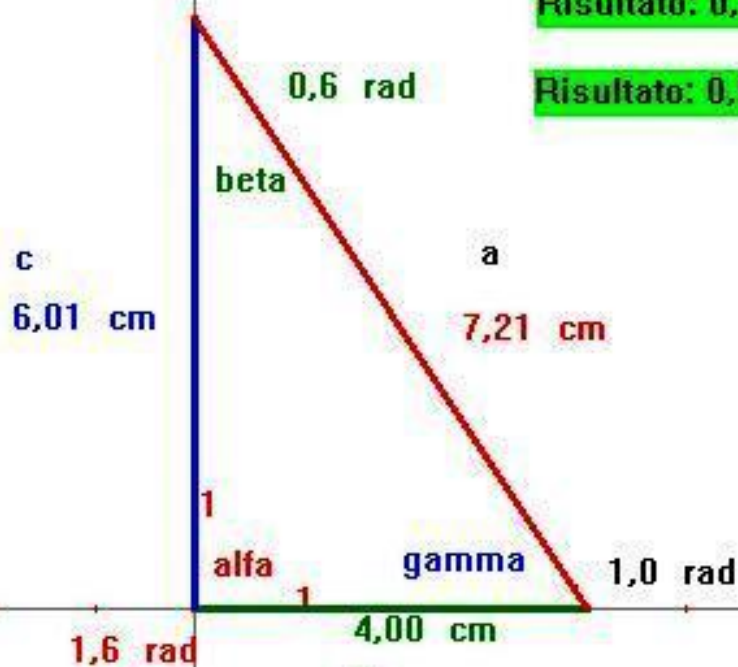
Risultato: 0,83 $\cos(\beta)$

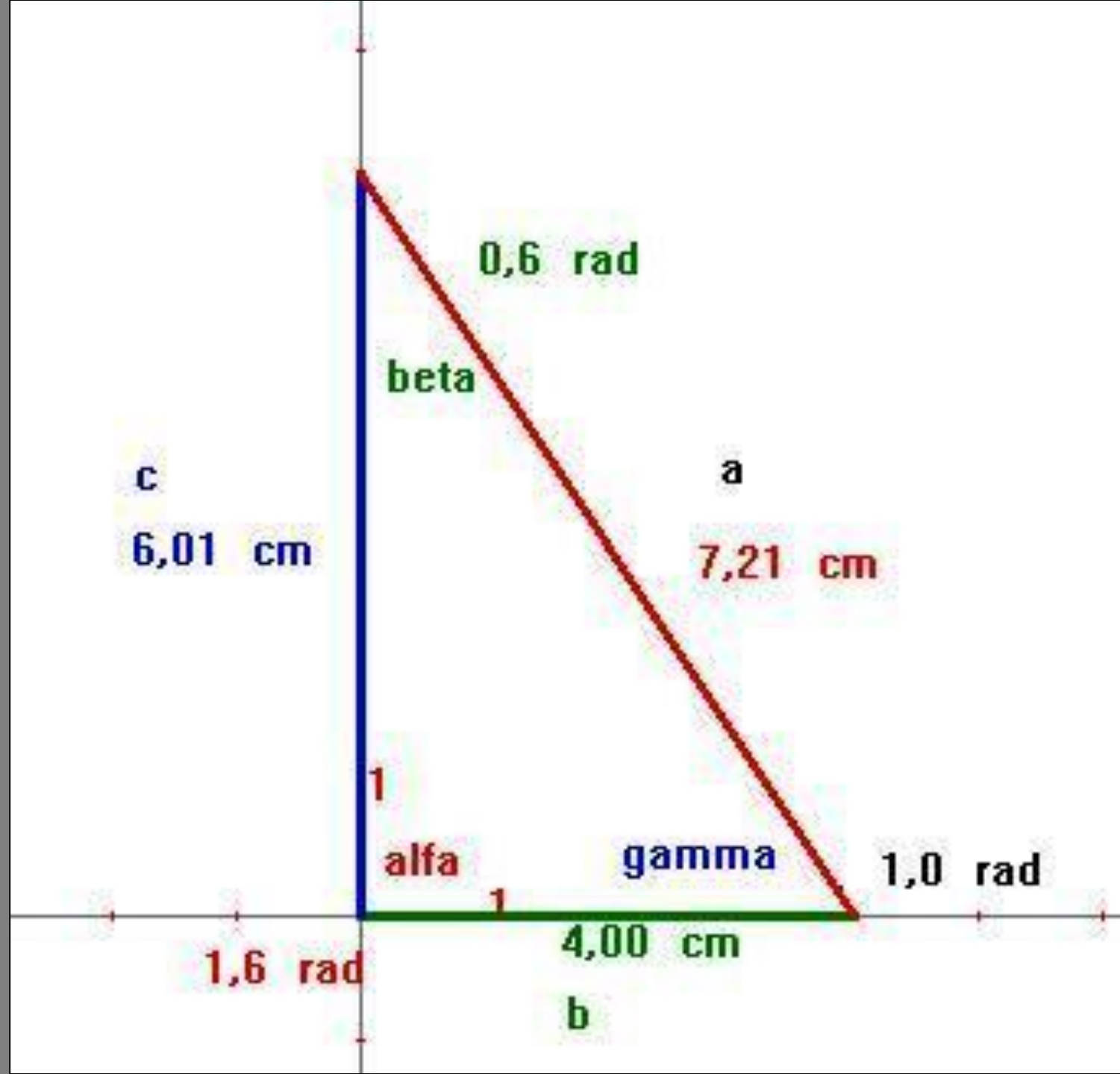
Risultato: 0,55 $\sin(\beta)$

calcolo con funzione sin, cos

$\cos(\gamma)$ Risultato: 0,55

$\sin(\gamma)$ Risultato: 0,83






```
#1: "triangolo rettangolo: formule per calcolare vari elementi"
#2: "cateti b,c ,ipotenusa a ; angoli  $\beta$ ,  $\gamma$ ,  $\alpha$  , radianti ( o gradi)"
#3: "b = a * sin( $\beta$ ) ; a * cos( $\gamma$ )"
#4: "c = a * sin( $\gamma$ ) ; a * cos( $\beta$ ) "
#5: "a = b / sin( $\beta$ ) : b / cos( $\gamma$ ) "
#6: "a = c / sin( $\gamma$ ) ; c / cos( $\beta$ ) "
#7: "b = c * tan( $\beta$ )"
#8: "c = b * tan( $\gamma$ ) "
#9: "-----"
#10: a := 7.21
#11: b := 4
#12: c := 6
#13:  $\beta$  := 0.6
#14:  $\gamma$  := 1
#15: "....."
#16: "b = a * sin( $\beta$ ) ; a * cos( $\gamma$ )"
#17: b := a * SIN(0.6)
#18: 4.0
#19: b := a * COS(1)
#20: 3.9
#21: "....."
```

```
#21: ". . . . ."
```

```
#22: "c = a * sin( $\gamma$ ) ; a * cos( $\beta$ ) "
```

```
#23: c := a * SIN(1)
```

```
#24: 6.0
```

```
#25: c := a * COS(0.6)
```

```
#26: 5.9
```

```
#27: ". . . . ."
```

```
#28: "a = b / sin( $\beta$ ) : b / cos( $\gamma$ ) "
```

```
#29: "a = c / sin( $\gamma$ ) ; c / cos( $\beta$ ) "
```

```
#30: a :=  $\frac{4}{\text{SIN}(0.6)}$ 
```

```
#31: 7.1
```

```
#32: a :=  $\frac{4}{\text{COS}(1)}$ 
```

```
#33: 7.3
```

```
#34: a :=  $\frac{6}{\text{SIN}(1)}$ 
```

```
#35: 7.1
```

```
#36: a :=  $\frac{6}{\text{COS}(0.6)}$ 
```

```
#37: 7.3
```

```
#38: ". . . . ."
```



Algebra dtriangol... [-] [□] [X]

```
#36: a :=  $\frac{0}{\cos(0.6)}$   
#37: 7.3  
#38: "....."  
#39: "b = c * tan(beta)"  
#40: "c = b * tan(gamma) "  
#41: b := 6 * TAN(0.6)  
#42: 4.1  
#43: c := 4 * TAN(1)  
#44: 3.2
```


#45: "....."

#46: "b = a * sin(β) ; a * cos(γ)"

#47: "c = a * sin(γ) ; a * cos(β) "

#48: "sin(β)= b / a"

#49:
$$\frac{4}{7.21}$$

#50: 0.5

#51: "cos(γ)= b /a"

#52:
$$\frac{4}{7.21}$$

#53: 0.5

#54: "sin(γ) = c /a"

#55:
$$\frac{6}{7.21}$$

#56: 0.8

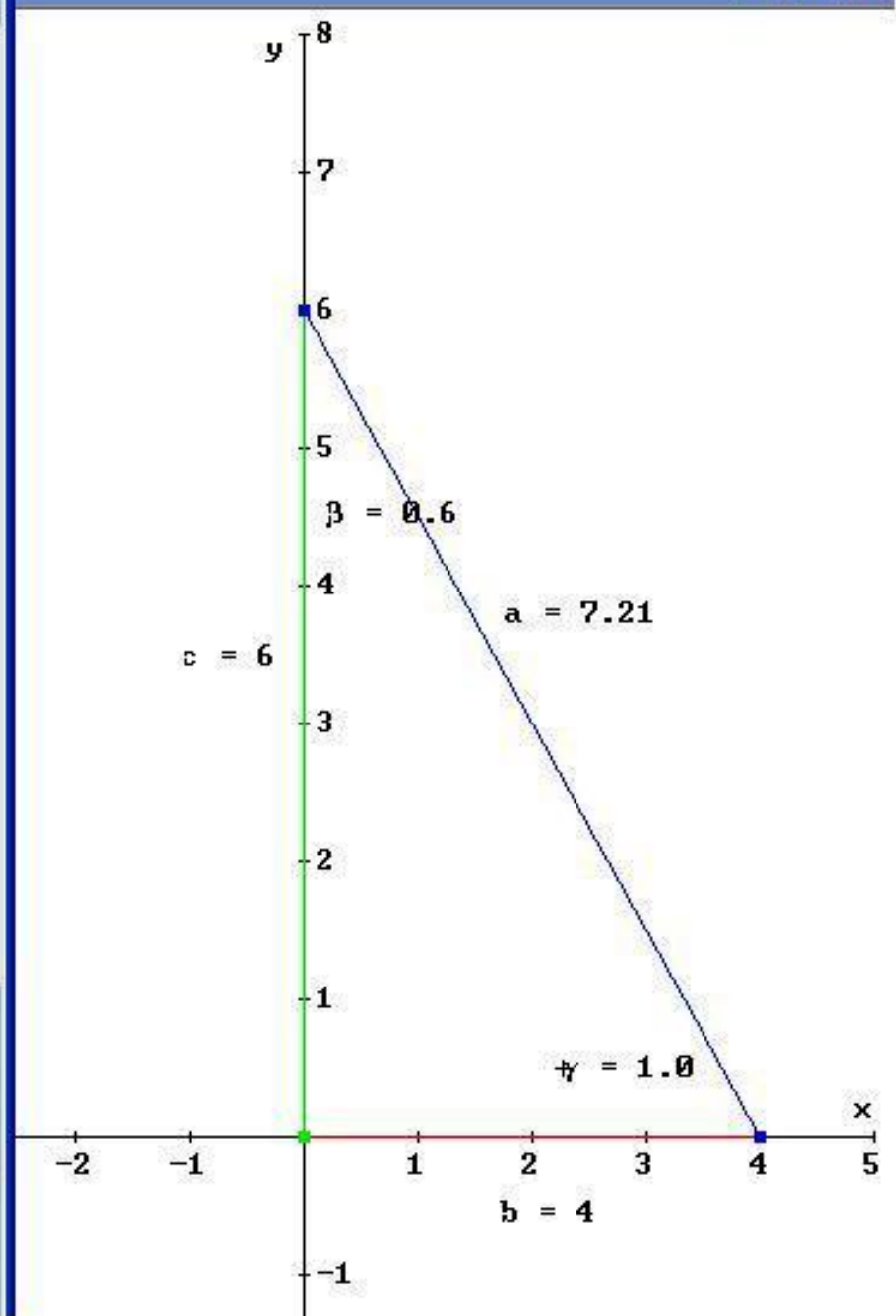
#57: "cos(β)=c /a"

#58:
$$\frac{6}{7.21}$$

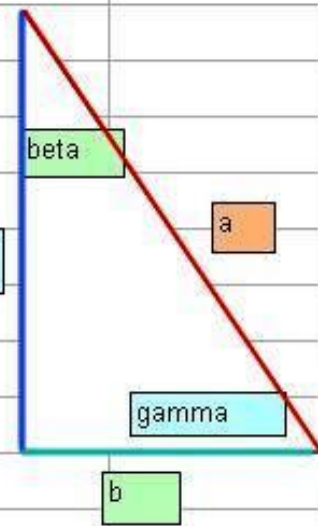
#59: 0.8

#60: "....."

- #58: $\frac{0}{7.21}$
- #59: 0.8
- #60: "....."
- #61: $\begin{bmatrix} 0 & 0 \\ 4 & 0 \end{bmatrix}$
- #62: $\begin{bmatrix} 0 & 0 \\ 0 & 6 \end{bmatrix}$
- #63: $\begin{bmatrix} 4 & 0 \\ 0 & 6 \end{bmatrix}$



	A	B	C	D	E	F	G	H	I	J
1	a	6,91			$b = a * \text{sen}(\text{beta})$	3,455		3,445 = 4		
2	b	4			$b = a * \text{cos}(\text{gamma})$	3,455				
3	c	6								
4	beta	30	0,52		$c = a * \text{sen}(\text{gamma})$	5,98423554				
5	gamma	60	1,05		$c = a * \text{cos}(\text{beta})$	5,98423554				
6										
7	valori da usare nei calcoli				$a = b / \text{sen}(\text{beta})$	6,91				
8					$a = b / \text{cos}(\text{gamma})$	6,91				
9										
10					$a = c / \text{sen}(\text{gamma})$	6,91				
11					$a = c / \text{cos}(\text{beta})$	6,91				
12										
13					$b = c * \text{tan}(\text{beta})$	3,455				
14					$c = b * \text{tan}(\text{gamma})$	5,98423554				
15										
16					$\text{sen}(\text{beta}) = b/a$	0,5				
17					$\text{cos}(\text{gamma}) = b/a$	0,5				
18										
19					$\text{sen}(\text{gamma}) = c/a$	0,866025404		$\text{sen}(\text{gamma})$	0,866025404	
20					$\text{cos}(\text{beta}) = c/a$	0,866025404		$\text{cos}(\text{beta})$	0,866025404	
21										



Vista Algebra

- Angolo
 - $\alpha = 1.57$ rad
 - $\beta = 0.69$ rad
 - $\gamma = 0.88$ rad
- Numero
 - $b = 4.97$
 - $d = 6.02$
 - distanzaAB = 5
 - distanzaAC = 6
 - $e = 7.81$
 - $f = 5$
 - $g = 6$
 - $m = 0.77$
- Punto
 - A = (0, 0)
 - B = (5, 0)
 - C = (0, 6)
- Segmento
 - $a = 7.81$
 - $c = 6$

Vista Grafica

triangolo rettangolo: formule per calcolare elementi in funzione di lati, angoli, noti

pitagora

$$a = \sqrt{6^2 + 5^2}$$

$$b = \sqrt{7.81^2 - 6^2}$$

$$c = \sqrt{7.81^2 - 5^2}$$

$$b = a \cdot \sin(\beta) \quad b = 4.97$$

$$b = a \cdot \cos(\gamma) \quad f = 5$$

$$a = b / \sin(\beta) \quad e = 7.81$$

$$a = b / \cos(\gamma)$$

$$c = a \cdot \sin(\gamma) \quad g = 6$$

$$c = a \cdot \cos(\beta)$$

$$a = c / \sin(\gamma) \quad a = 7.81$$

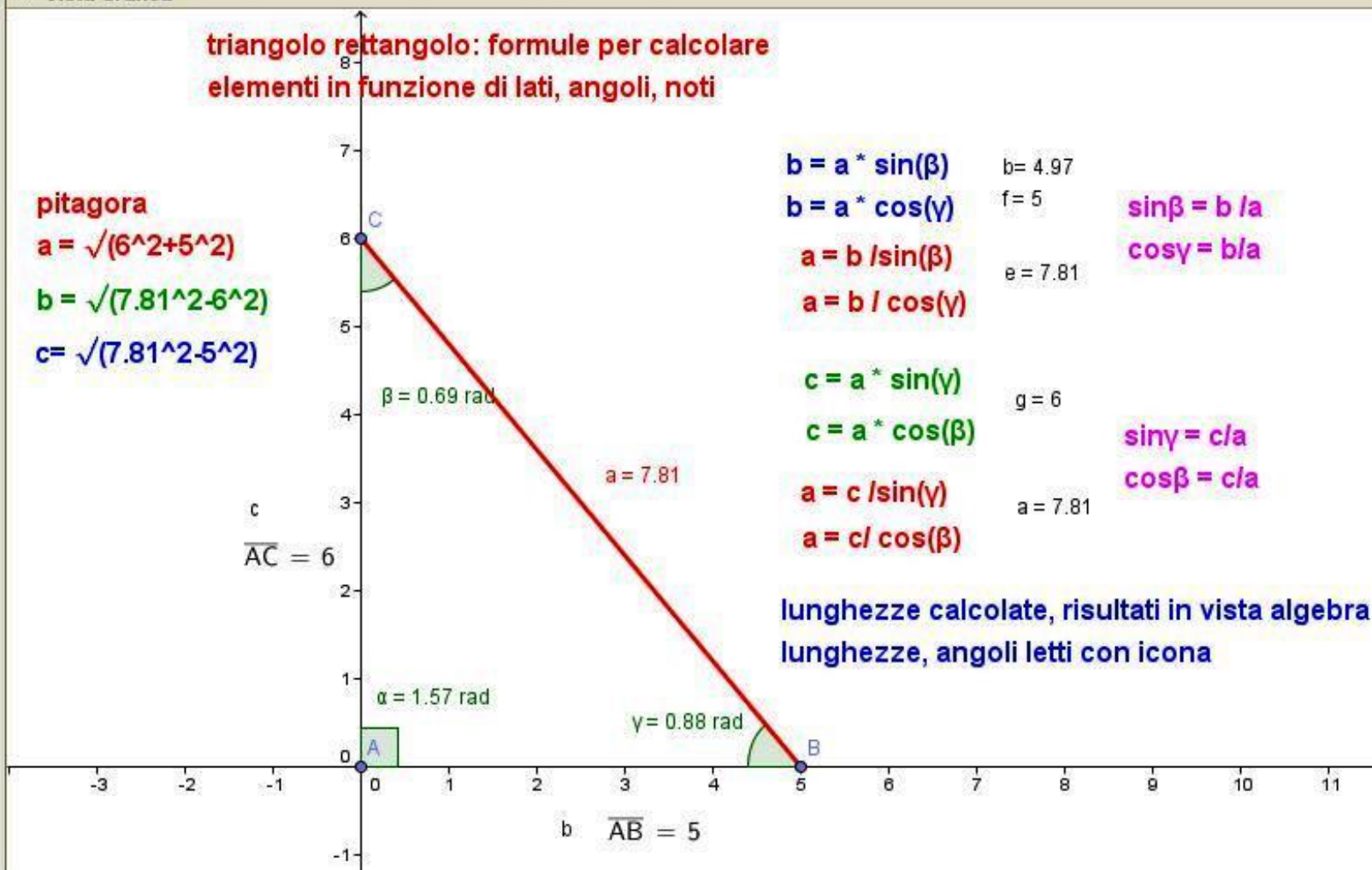
$$a = c / \cos(\beta)$$

$$\sin \beta = b / a$$

$$\cos \gamma = b / a$$

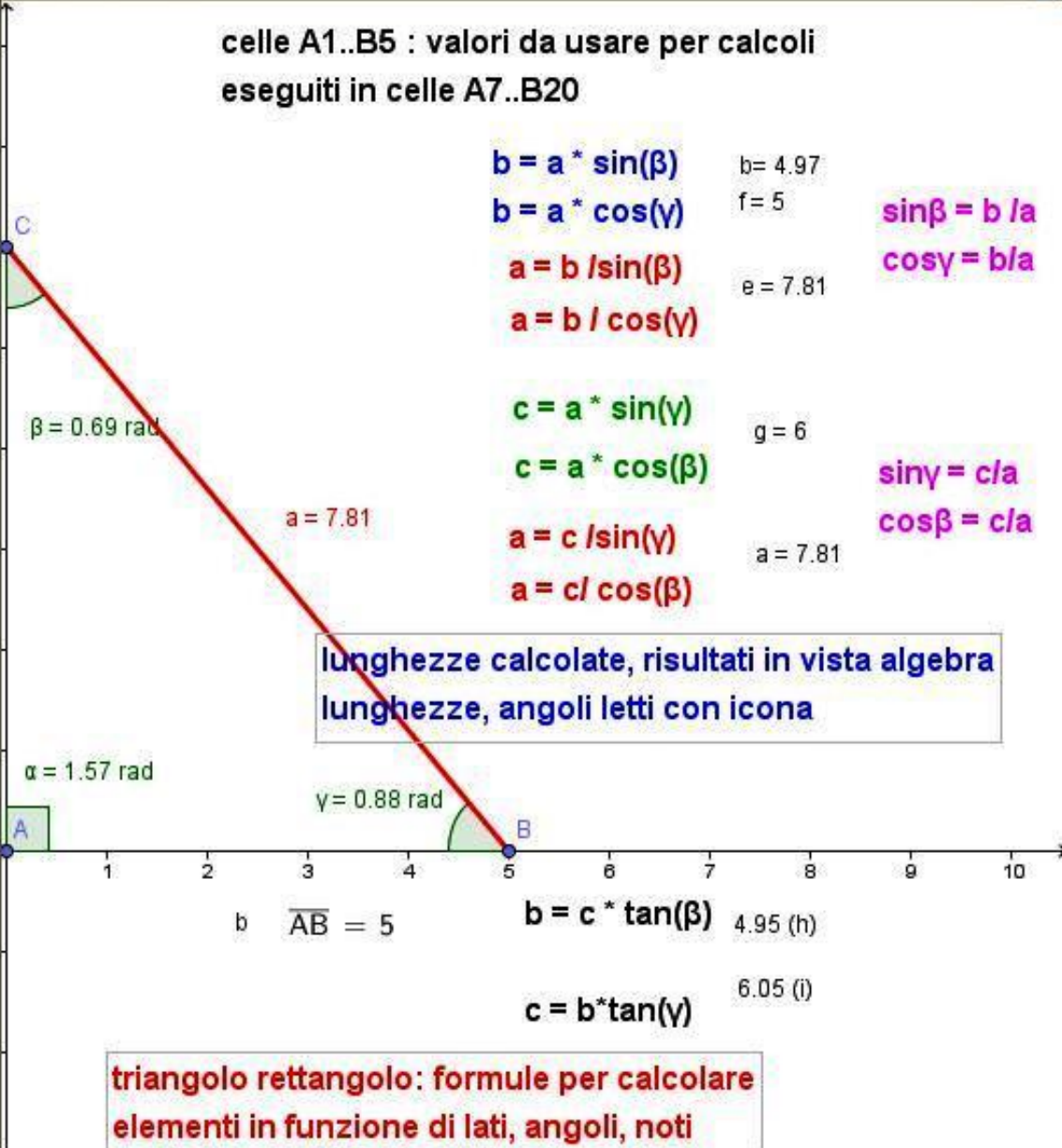
$$\sin \gamma = c / a$$

$$\cos \beta = c / a$$



lunghezze calcolate, risultati in vista algebra
lunghezze, angoli letti con icona

- Angolo
 - $\alpha = 1.57$ rad
 - $\beta = 0.69$ rad
 - $\gamma = 0.88$ rad
- Numero
 - $b = 4.97$
 - $d = 6.02$
 - distanzaAB = 5
 - distanzaAC = 6
 - $e = 7.81$
 - $f = 5$
 - $g = 6$
 - $h = 4.95$
 - $i = 6.05$
 - $m = 0.77$
- Punto
 - A = (0, 0)
 - B = (5, 0)
 - C = (0, 6)
- Segmento
 - $a = 7.81$
 - $c = 6$



	A	B	C
1	7.81	'a	
2	4.97	'b	
3	6	'c	
4	0.69	'beta	
5	0.88	'gamma	
6			
7	'b	4.97	
8	'b	4.98	
9			
10	'c	6.02	
11	'c	6.02	
12			
13	'a	7.81	
14	'a	7.8	
15			
16	'a	7.78	
17	'a	7.78	
18			
19	'b	4.95	
20	'c	6.01	
21			
22			
23			
24			

	A	B	C	D
1	7.81	'a		
2	4.97	'b		
3	6	'c		
4	0.69	'beta		
5	0.88	'gamma		
6				
7	'b	4.97		
8	'b	4.98		
9				
10	'c	6.02		
11	'c	6.02		
12				
13	'a	7.81		
14	'a	7.8		
15				
16	'a	7.78		
17	'a	7.78		
18				
19	'b	4.95		
20	'c	6.01		
21				
22				
23				
24				

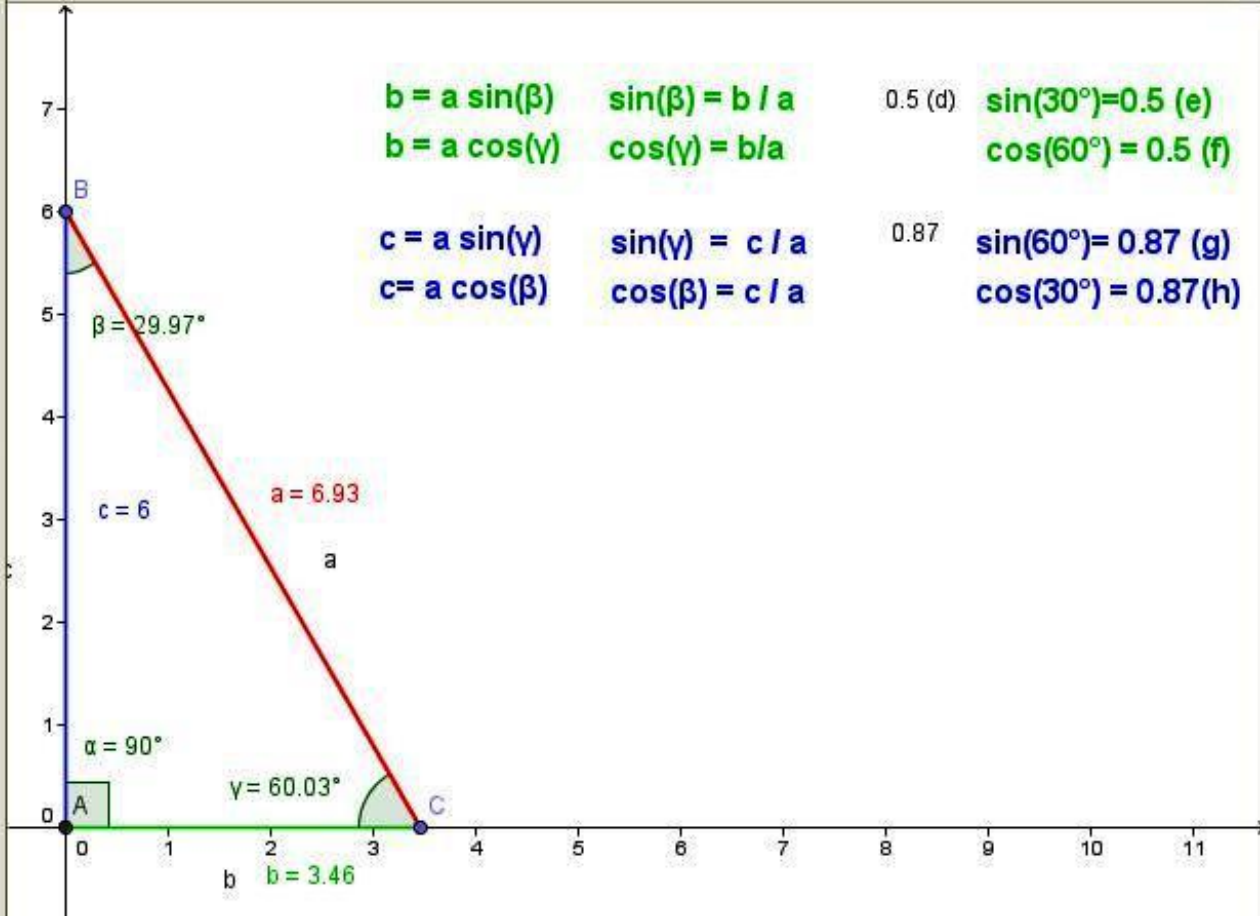
N.	Nome	Definizione	Valore
54	Testo A14		'a
55	Numero B7	A1 sin(A4)	B7 = 4.97
56	Numero B8	A1 cos(A5)	B8 = 4.98
57	Numero B10	A1 sin(A5)	B10 = 6.02
58	Numero B11	A1 cos(A4)	B11 = 6.02
59	Numero B13	A2 / sin(A4)	B13 = 7.81
60	Numero B14	A2 / cos(A5)	B14 = 7.8
61	Testo A16		'a
62	Testo A17		'a
63	Numero B16	A3 / sin(A5)	B16 = 7.78
64	Numero B17	A3 / cos(A4)	B17 = 7.78
65	Testo A19		'b
66	Testo A20		'c
67	Numero B19	A3 tan(A4)	B19 = 4.95
68	Numero B20	A2 tan(A5)	B20 = 6.01



Vista Algebra

angolo
 $\alpha = 90^\circ$
 $\beta = 29.97^\circ$
 $\gamma = 60.03^\circ$
 numero
 $d = 0.87$
 $e = 0.5$
 $f = 0.5$
 $g = 0.87$
 $h = 0.87$
 punto
 $A = (0, 0)$
 $B = (0, 6)$
 $C = (3.46, 0)$
 segmento
 $a = 6.93$
 $b = 3.46$
 $c = 6$

Vista Grafica



Vista Foglio di calcolo

f_x	G	C			
	A	B	C		
1	'b/a	0.5	0.5		
2	'b/a	0.5	0.5		
3					
4	'c/a	0.87	0.87		
5	'c/a	0.87	0.87		
6					
7	'b	3.46			
8	'c	6			
9	'a	6.93			
10					
11	'beta	30°			
12	'gamma	60°			
13					
14					
15					
16					
17					
18					