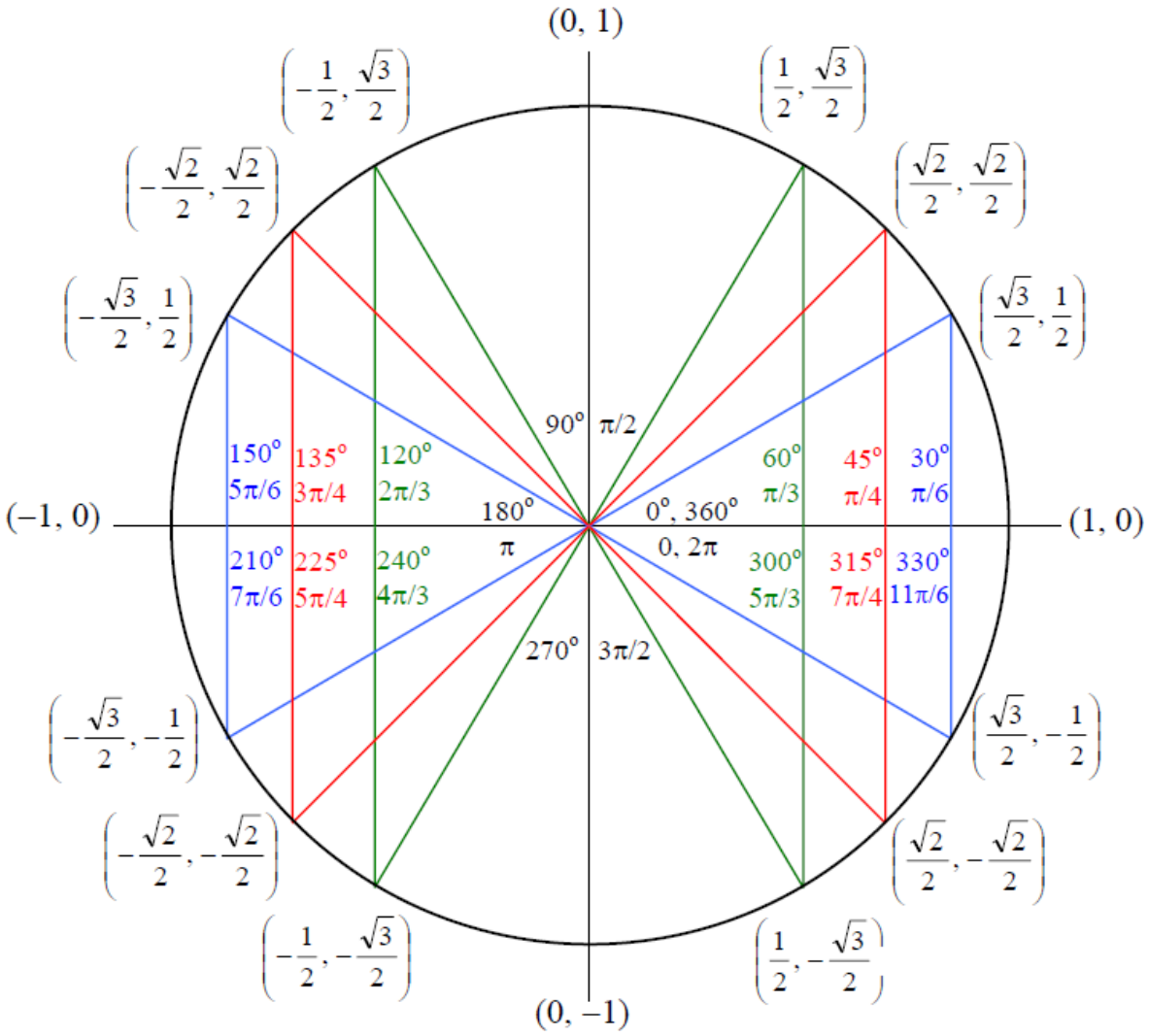
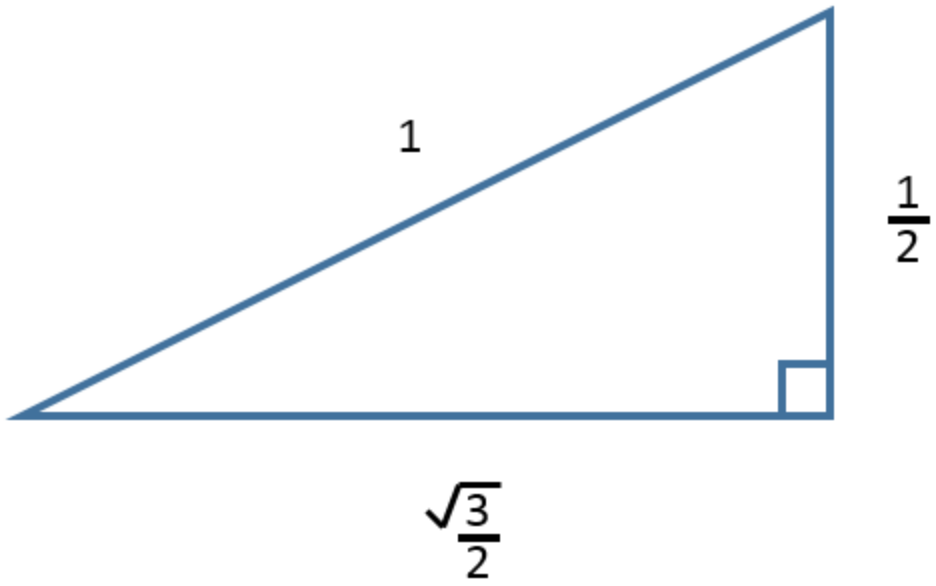
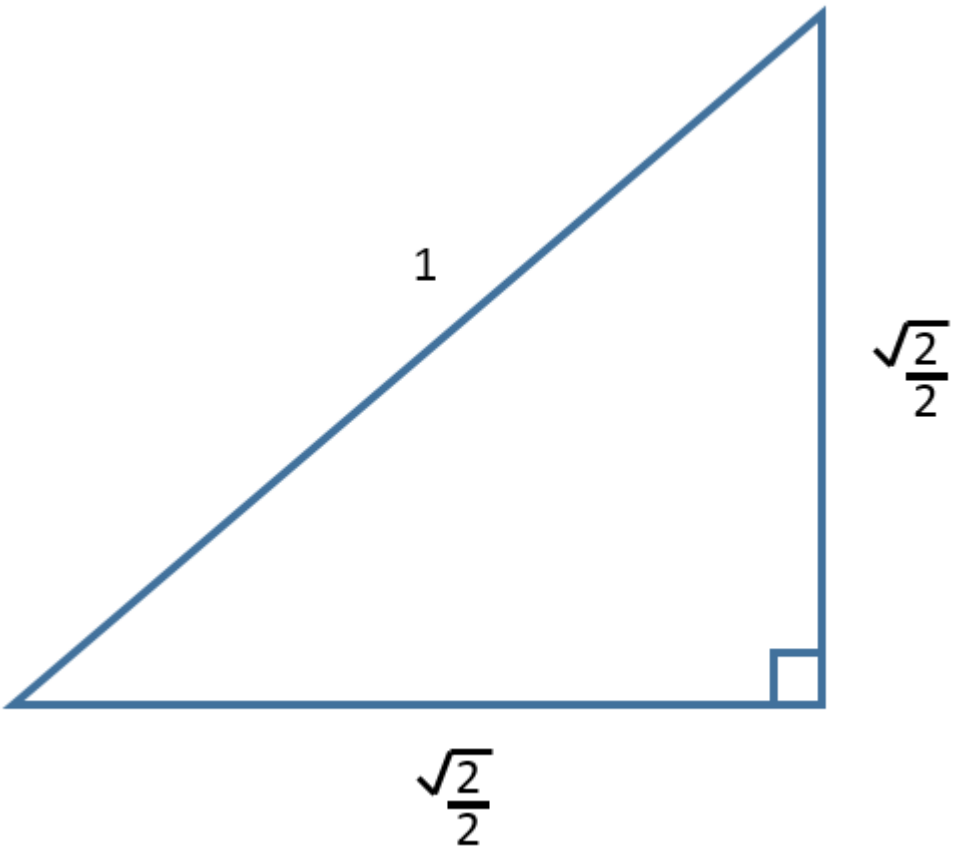
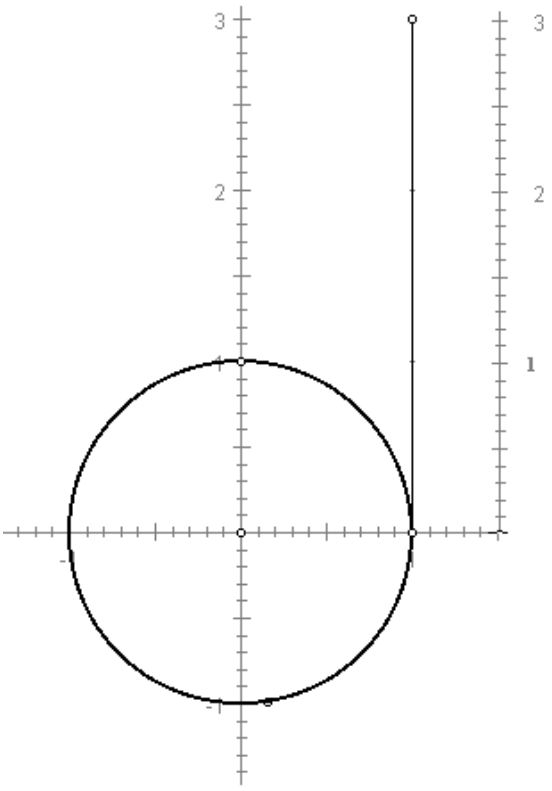
The Unit Circle

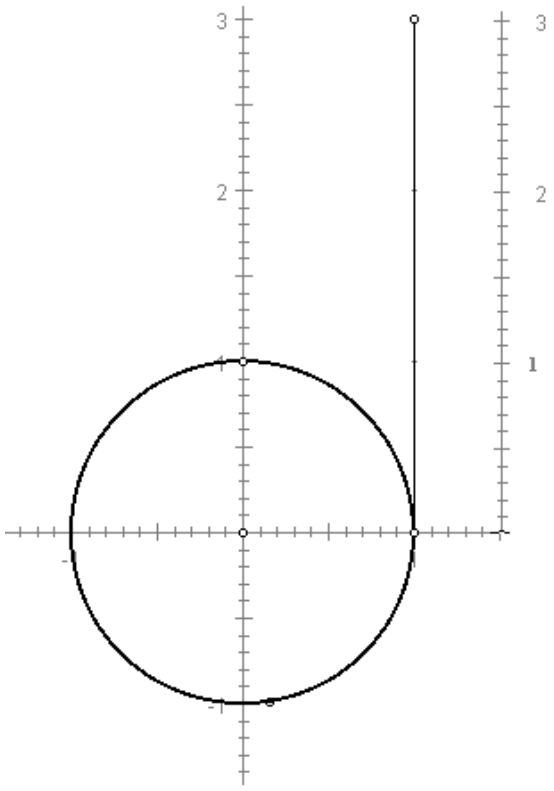


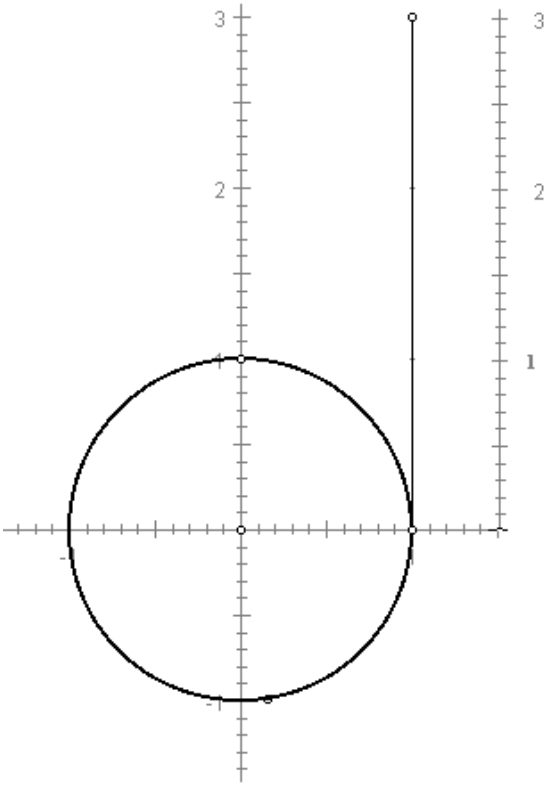
$(\cos x, \sin x)$

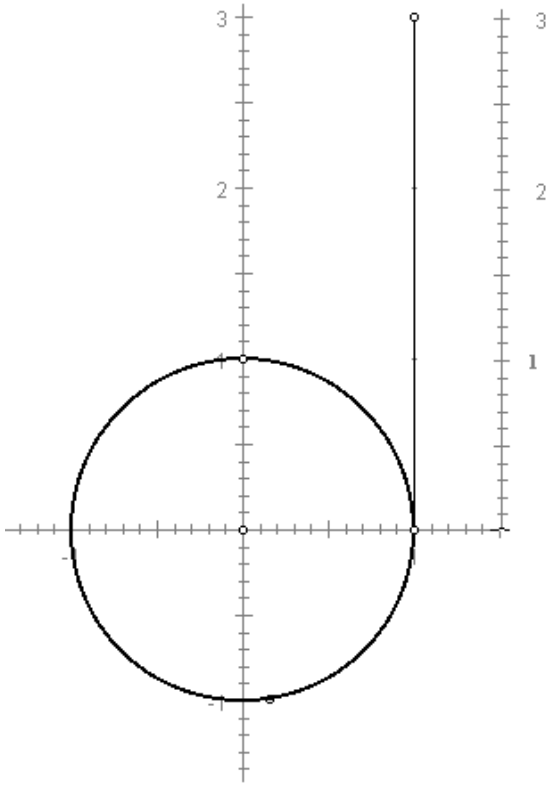

1
$\frac{1}{2}$
$\frac{\sqrt{3}}{2}$

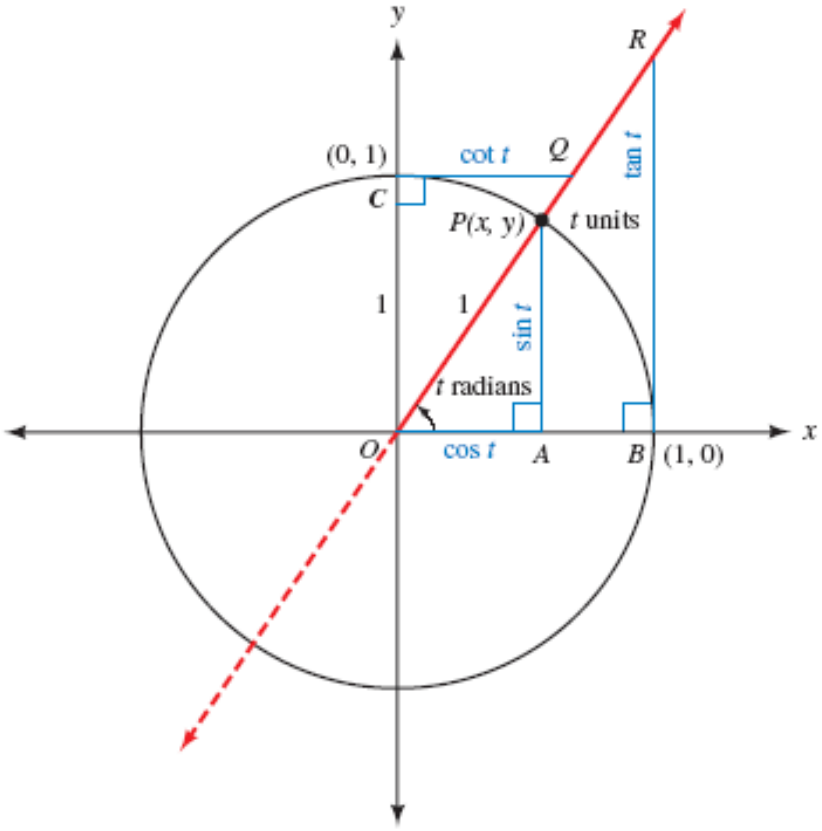

1
$\frac{\sqrt{2}}{2}$
$\frac{\sqrt{2}}{2}$

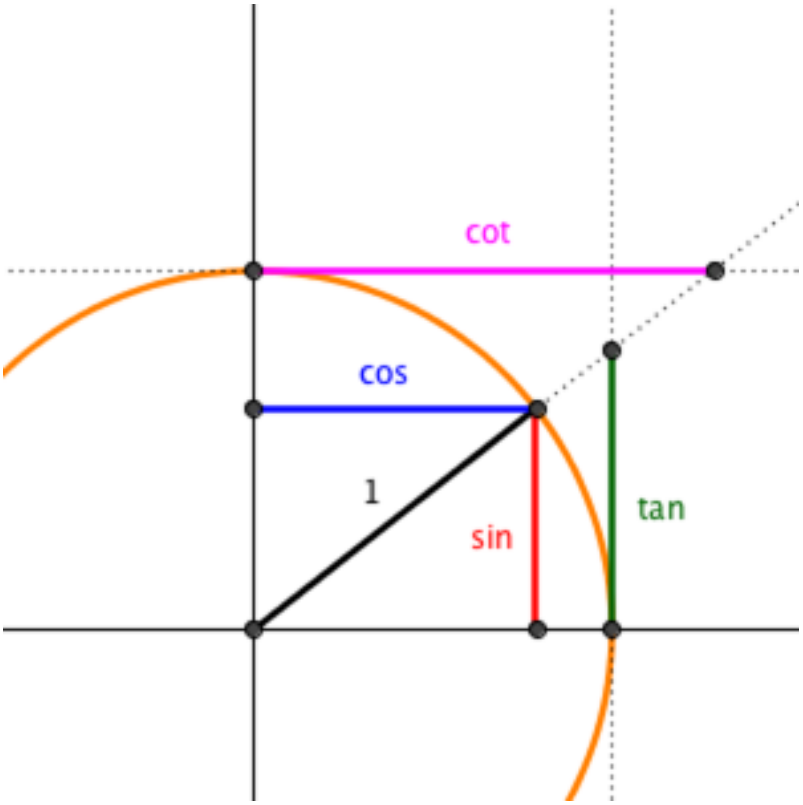

3
2
1
3
2
1

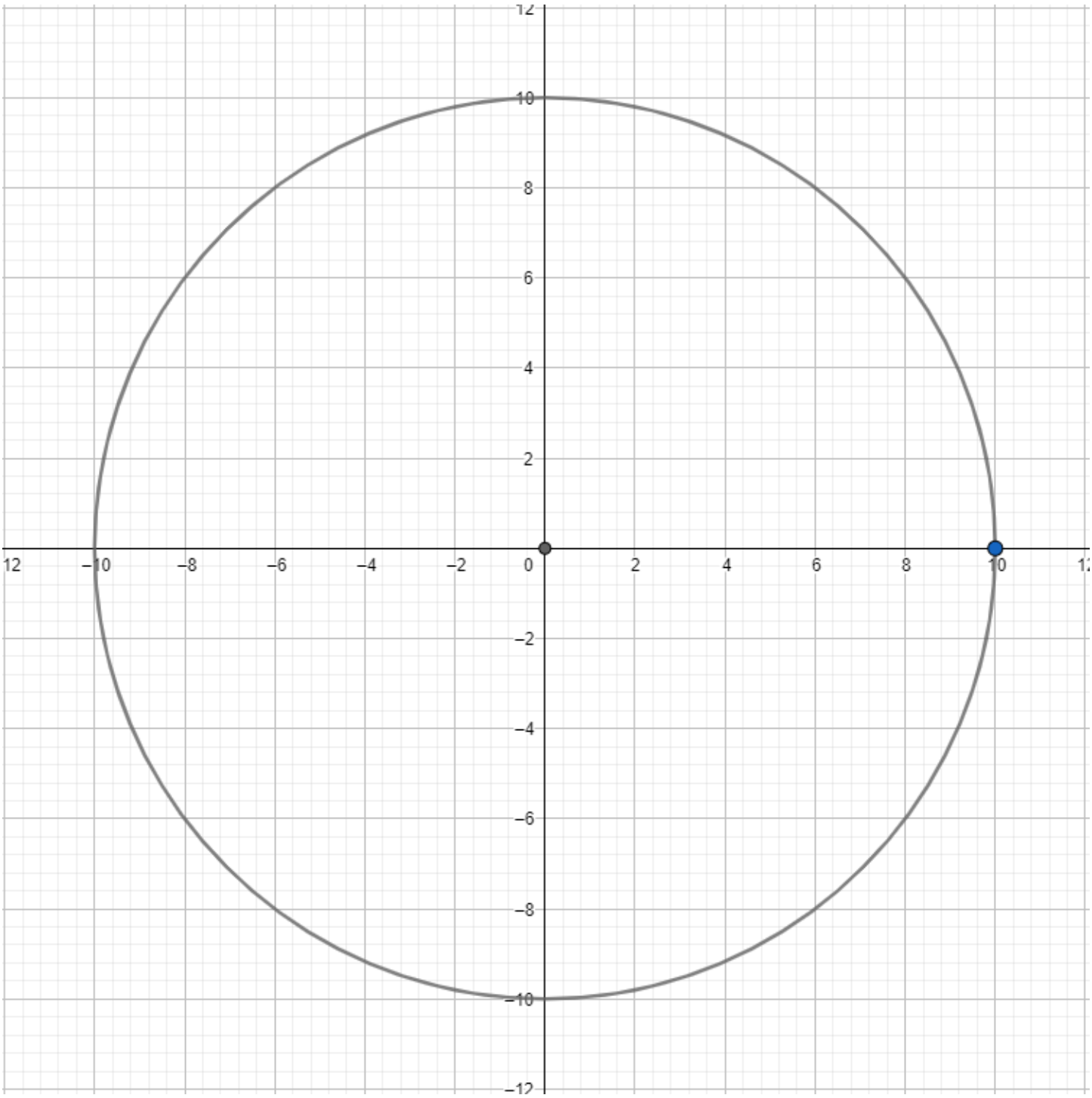

3
2
1
3
2
1

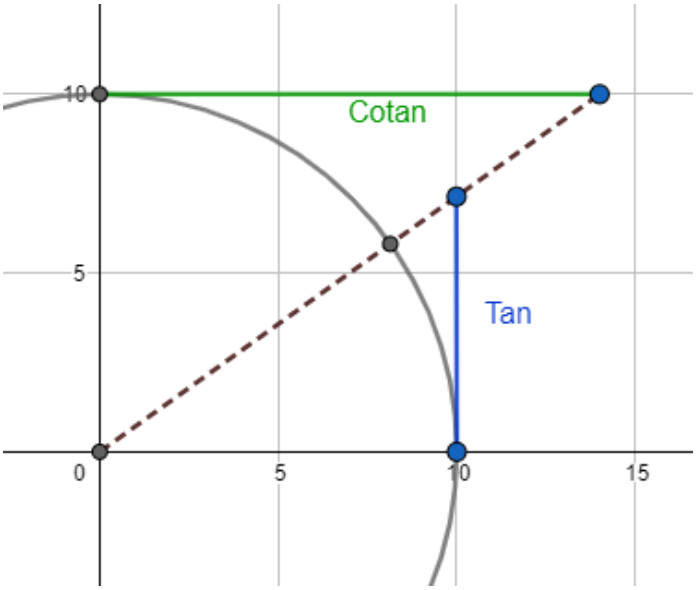

3
2
1
3
2
1

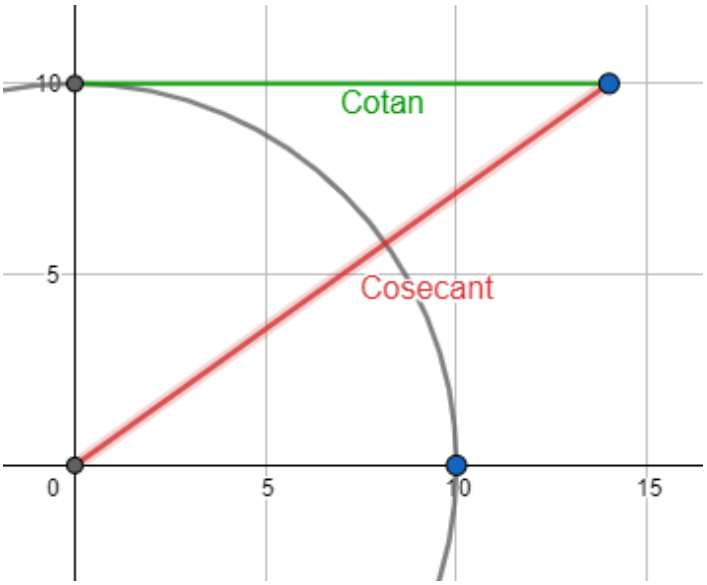

3
2
1
3
2
1

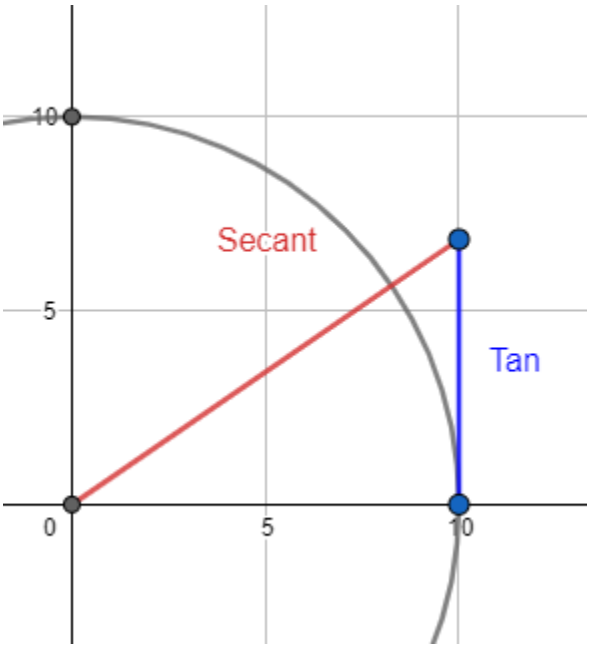

y
R
(0, 1)
cot t
Q
tan t
C
P(x, y)
t units
1
1
sin t
t radians
O
cos t
A
B
(1, 0)
x


cot
cos
1
sin
tan

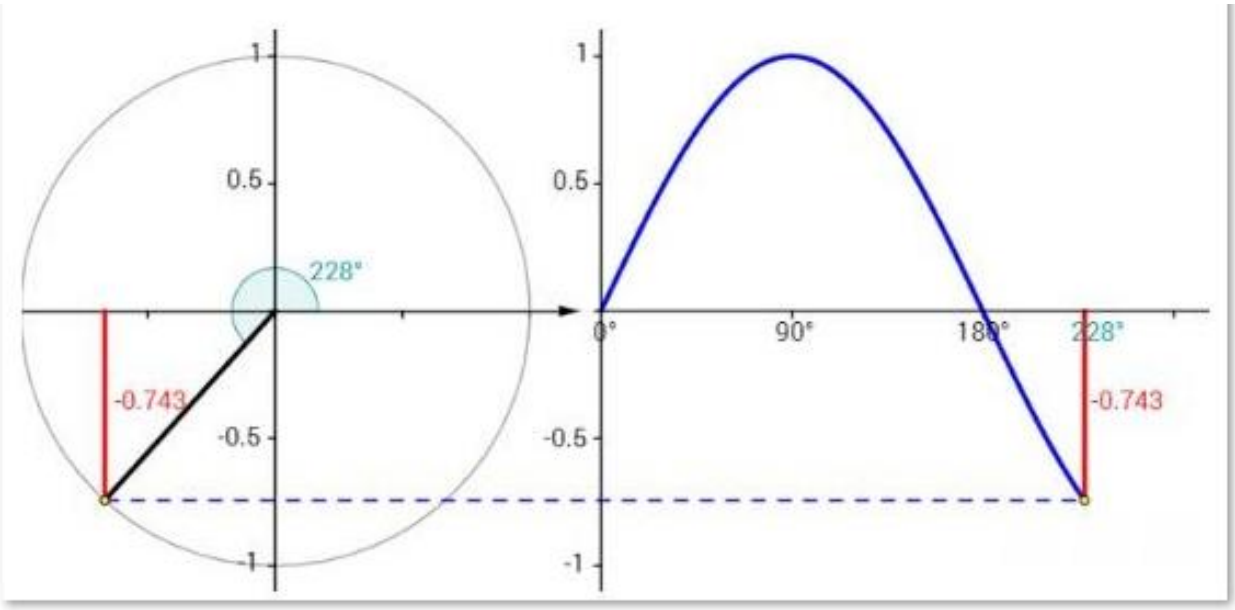

12
10
8
6
4
2
12
−10
−8
−6
−4
−2
0
2
4
6
8
10
−2
−4
−6
−8
−10
−12


Cotan
Tan
10
5
0
5
10
15

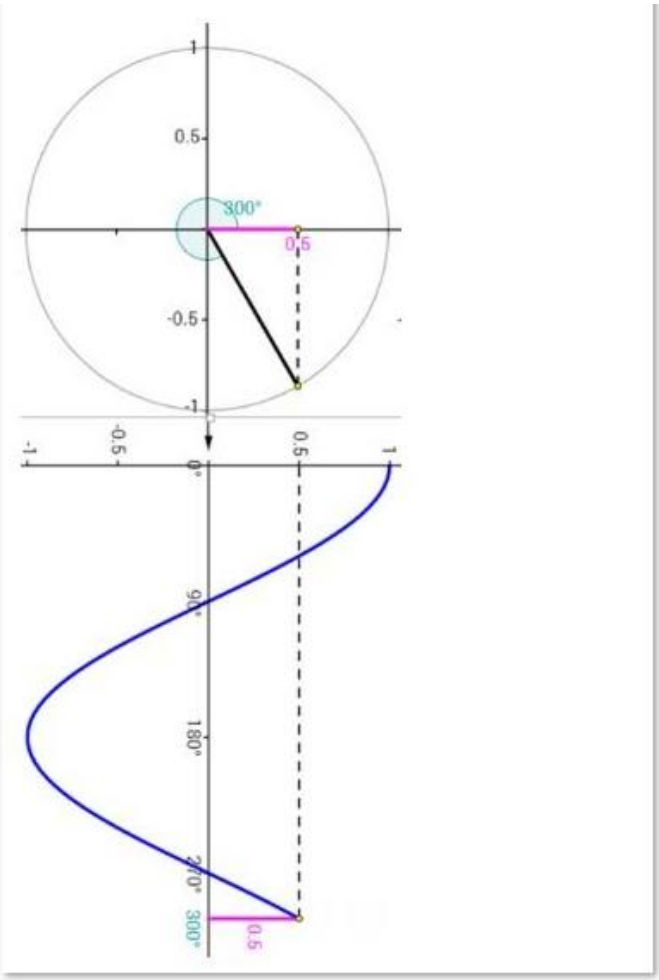

Cotan
Cosecant
10
5
0
5
10
15


Secant
Tan
10
5
0
5
10

Sine Graph



Cosine Graph (drawn vertically, to show the x-deflection)

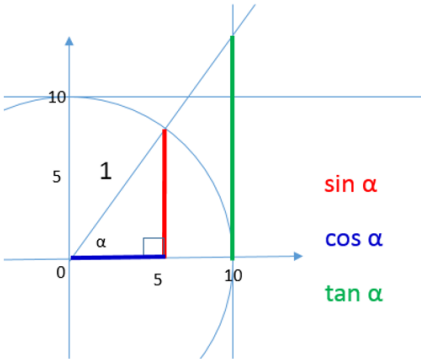


Primary Trig Ratios

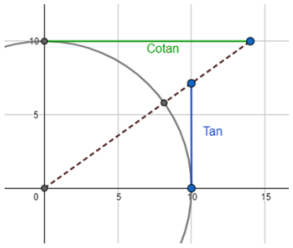
$$sin \propto = \frac{opp}{hyp}$$

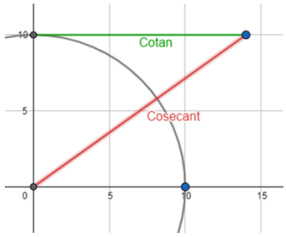
$$cos \propto = \frac{adj}{hyp}$$

$$tan \propto = \frac{opp}{adj}$$



Reciprocal Trig Ratios

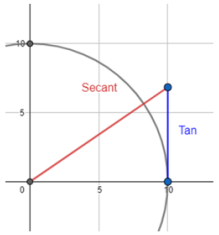




$$csc \propto = \frac{1}{sin} = \frac{hyp}{opp}$$

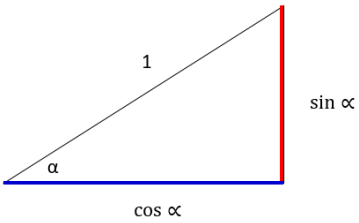
$$sec \propto = \frac{1}{cos} = \frac{hyp}{adj}$$

$$cot \propto = \frac{1}{tan} = \frac{adj}{opp}$$



Quotient Identities

$$tan \propto = \frac{opp}{adj} = \frac{sin}{cos}$$

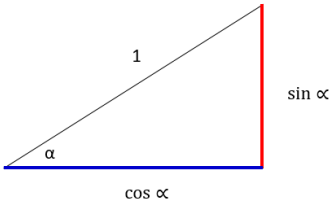


$$cot \propto = \frac{adj}{opp} = \frac{cos}{sin}$$

Pythagorean Identities

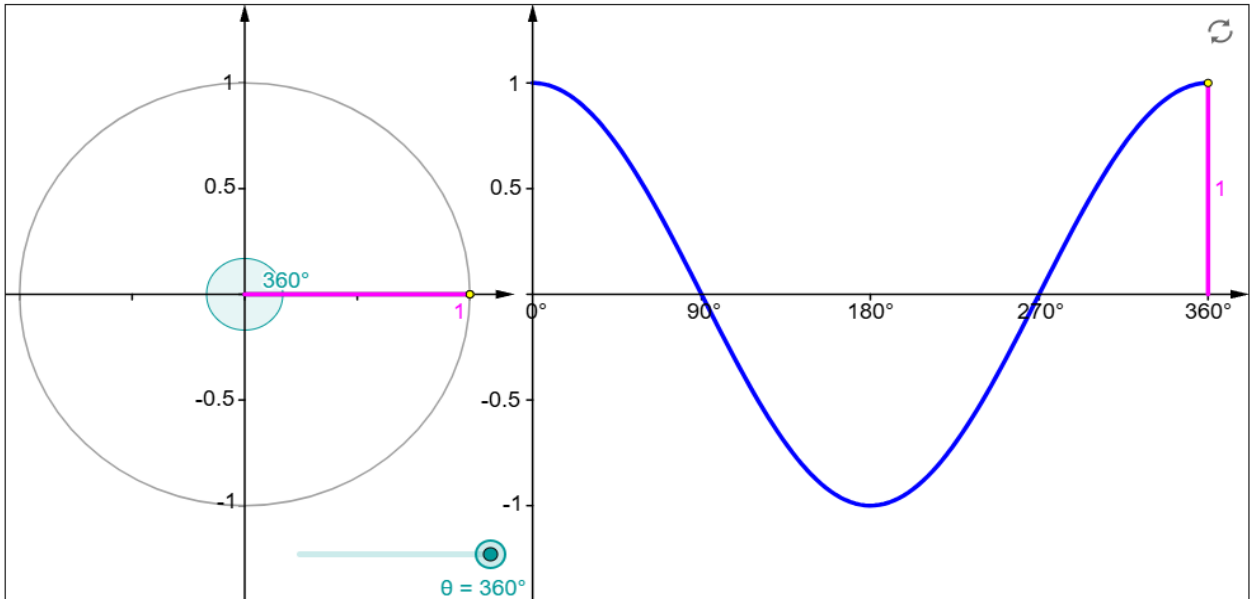
$$sin^2 \propto + cos^2 \propto = 1$$

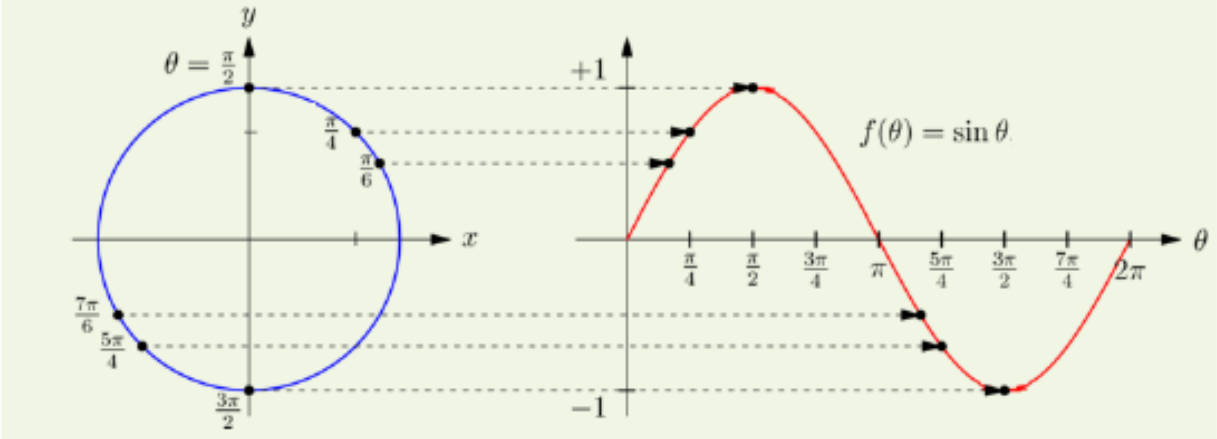
$$1 + tan^2 \propto = sec^2 \propto$$

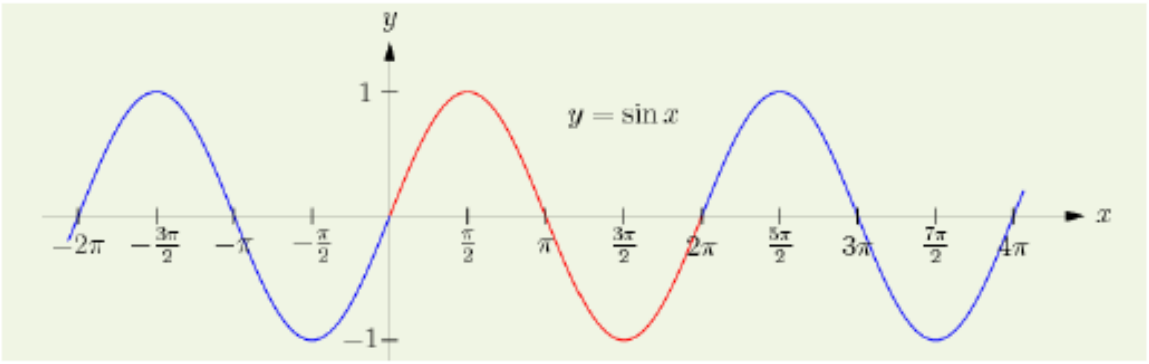


$$1 + cot^2 \propto = csc^2 \propto$$

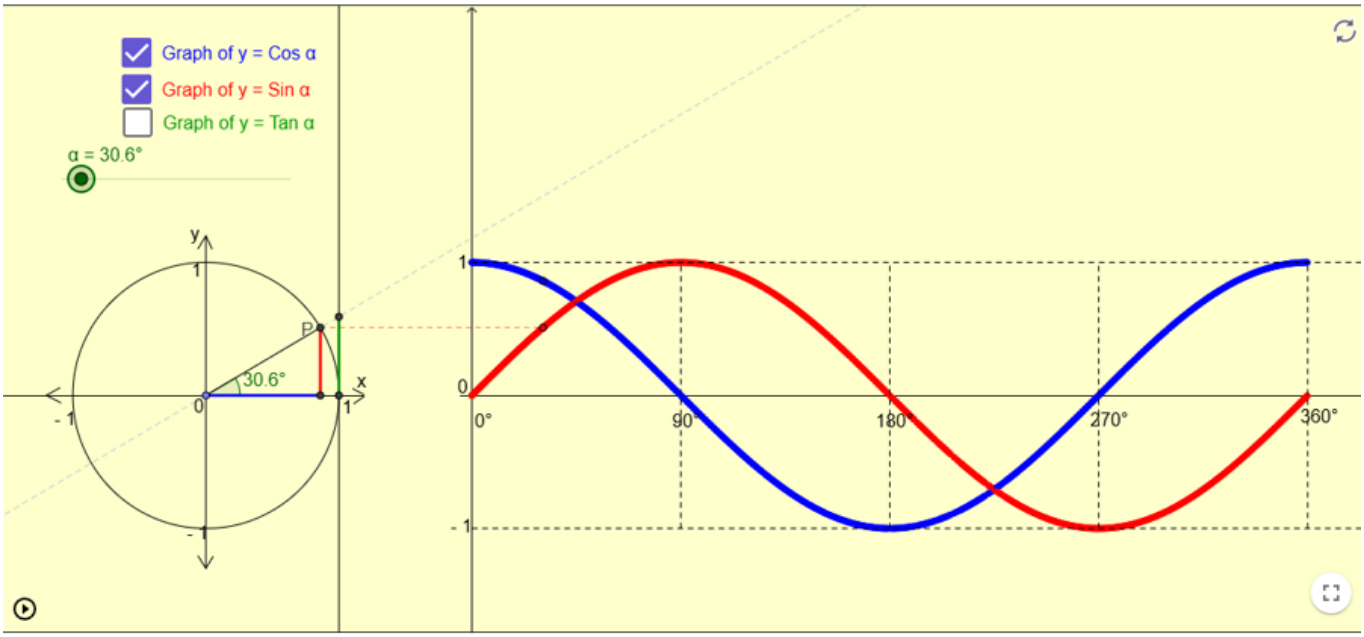
Cosine Graph (horizontal)







TRIG FUNCTIONS in Motion



Unit Circle and the Trigonometric Functions (animated) – GeoGebra

https://www.geogebra.org/m/tpfebt9w