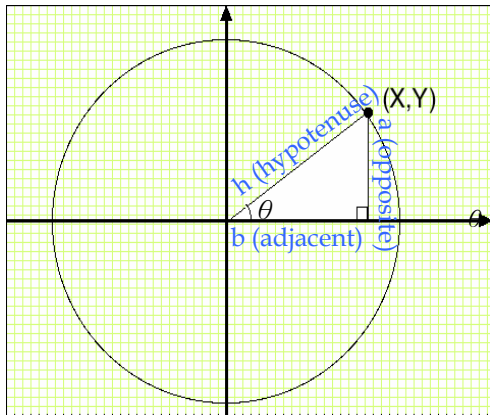


Trigonometry (삼각함수)



- $\sin\theta = a/h$
- $\cos\theta = b/h$
- $\tan\theta = a/b$
- $b = h \cdot \cos\theta$
- $a = h \cdot \sin\theta$
- $x^2 + y^2 = 1$
- $x = \cos\theta$
- $y = \sin\theta$
- $y/x = \sin\theta/\cos\theta = \tan\theta$
- $x = \text{distance} \cdot \cos\theta$
- $y = \text{distance} \cdot \sin\theta$

Trigonometry

- Multiplicative inverse:
 $\csc\theta = 1/\sin\theta$
 $\sec\theta = 1/\cos\theta$
 $\cot\theta = 1/\tan\theta = \cos\theta/\sin\theta = x/y$
- Inverse:
 $\arcsin(x) = \sin^{-1}(x)$
 where $y = \arcsin(x)$ $x: [-1, 1] \rightarrow y: [-\pi/2, \pi/2]$
 $\arccos(x) = \cos^{-1}(x)$
 where $y = \arccos(x)$ $x: [-1, 1] \rightarrow y: [0, \pi]$
 $\arctan(x) = \tan^{-1}(x)$
 where $y = \arctan(x)$ $x: [-\infty, \infty] \rightarrow y: [-\pi/2, \pi/2]$

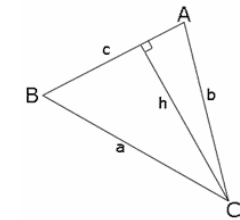
Trigonometric Identity

- $\sin^2\theta + \cos^2\theta = 1$
- $1 + \tan^2\theta = \sec^2\theta$
- $1 + \cot^2\theta = \csc^2\theta$
- $\sin(\pi/2 - \theta) = \cos\theta$
- $\cos(\pi/2 - \theta) = \sin\theta$
- $\tan(\pi/2 - \theta) = \cot\theta$
- $\sin(x+y) = \sin x \cos y + \cos x \sin y$
- $\sin(x-y) = \sin x \cos y - \cos x \sin y$
- $\cos(x+y) = \cos x \cos y - \sin x \sin y$
- $\cos(x-y) = \cos x \cos y + \sin x \sin y$
- $\sin 2\theta = 2\sin\theta \cos\theta$
- $\cos 2\theta = \cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1 = 1 - 2\sin^2\theta$

Law of Sines and Law of Cosines

- Law of sines

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



- Law of cosines

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

