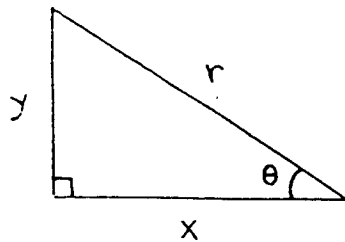


Math 17A  
Kouba  
Trigonometry



$$1. \quad \sin^2 \theta + \cos^2 \theta = 1$$

$$2. \quad 1 + \tan^2 \theta = \sec^2 \theta$$

$$3. \quad 1 + \cot^2 \theta = \csc^2 \theta$$

$$4. \quad \sin 2\theta = 2 \cos \theta \sin \theta$$

$$5. \quad \cos 2\theta = 2 \cos^2 \theta - 1$$

$$= 1 - 2 \sin^2 \theta$$

$$= \cos^2 \theta - \sin^2 \theta$$

$$\cos \theta = x / r$$

$$\sin \theta = y / r$$

$$\tan \theta = y / x$$

$$\sec \theta = r / x$$

$$\csc \theta = r / y$$

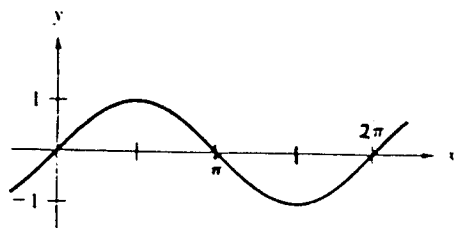
$$\cot \theta = x / y$$

$\theta$

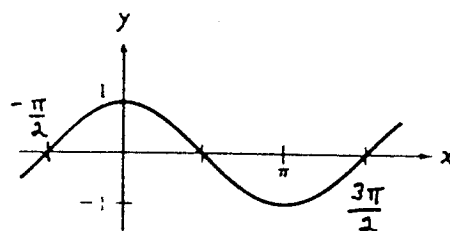
| degrees    | radians | $\cos \theta$ | $\sin \theta$ | $\tan \theta$ |
|------------|---------|---------------|---------------|---------------|
| $0^\circ$  | 0       | 1             | 0             | 0             |
| $30^\circ$ | $\pi/6$ | $\sqrt{3}/2$  | $1/2$         | $1/\sqrt{3}$  |
| $45^\circ$ | $\pi/4$ | $\sqrt{2}/2$  | $\sqrt{2}/2$  | 1             |
| $60^\circ$ | $\pi/3$ | $1/2$         | $\sqrt{3}/2$  | $\sqrt{3}$    |
| $90^\circ$ | $\pi/2$ | 0             | 1             | undefined     |

Math 17A  
Kouba  
Trigonometry

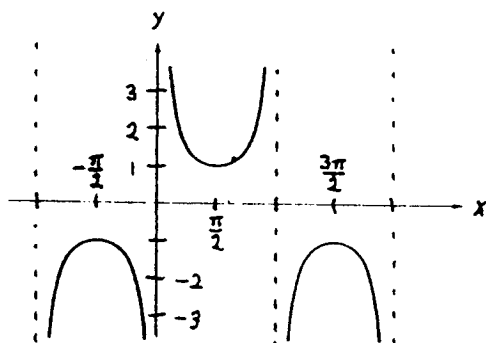
Please commit these graphs to memory.



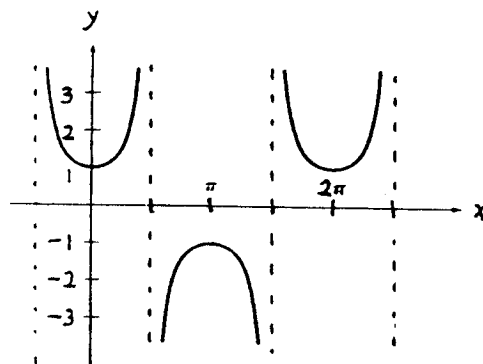
$$y = \sin x$$



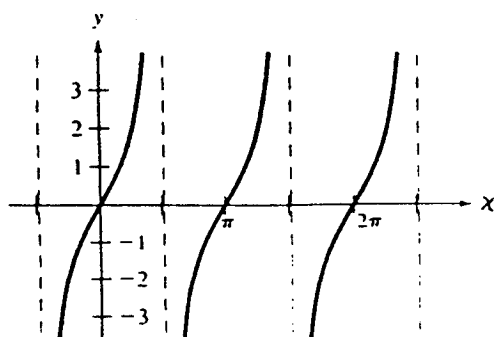
$$y = \cos x$$



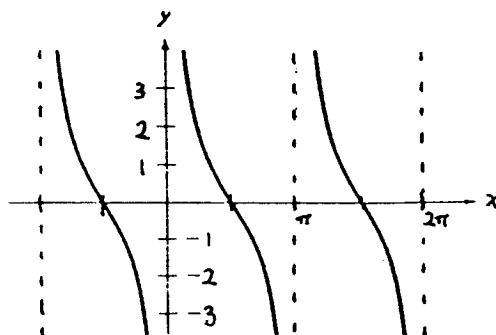
$$y = \csc x = \frac{1}{\sin x}$$



$$y = \sec x = \frac{1}{\cos x}$$



$$y = \tan x$$



$$y = \cot x = \frac{1}{\tan x}$$

# COSINE AND SINE VALUES ON THE UNIT CIRCLE

