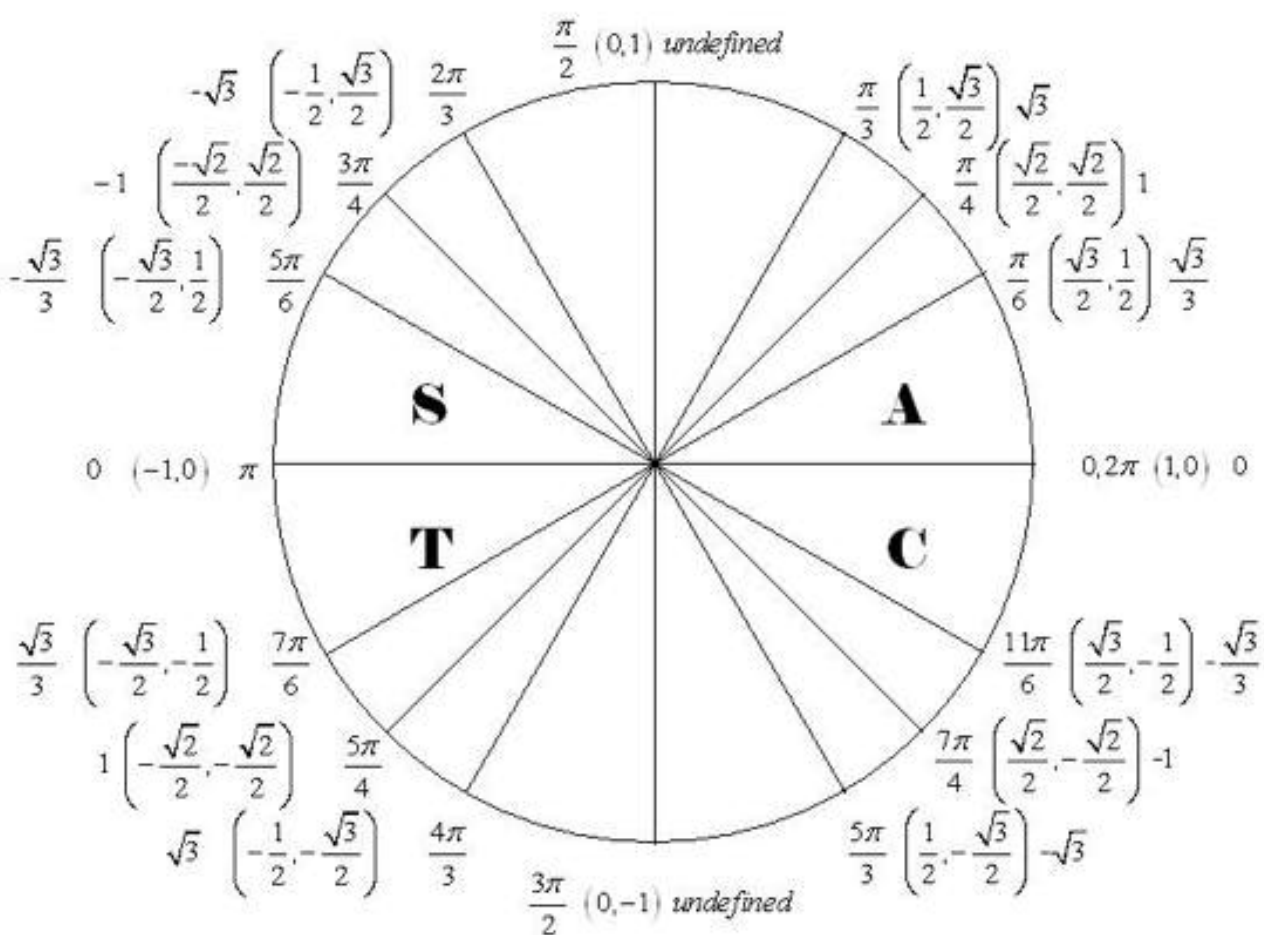


TANGENT EQUATIONS

Goal:
- to solve tangent equations

UNIT CIRCLE



$$\tan x = \sqrt{3}$$

$$x = \tan^{-1}(\sqrt{3})$$

$$x = \frac{\pi}{3} + \underline{\pi n}$$

Tangent equations have one
solution immediately
(not 2)

$$\text{period} = \frac{\pi}{|b|} = \frac{\pi}{1} = \pi$$

$$4\tan^2(x-\pi/4)+4=0$$

$$4\tan^2(x-\frac{\pi}{4})=-4$$

$$\tan^2(x-\frac{\pi}{4})=-1$$

$$2(x-\frac{\pi}{4})=\tan^{-1}(-1)$$

$$2(x-\frac{\pi}{4})=\frac{3\pi}{4}+\pi n$$

$$x-\frac{\pi}{4}=\frac{3\pi}{8}+\frac{\pi}{2}n$$

$$x=\frac{3\pi}{8}+\frac{\pi}{4}+\frac{\pi}{2}n$$

$$x=\frac{5\pi}{8}+\frac{\pi}{2}n$$

$$\cos x \tan x = 1$$

$$\tan x = \frac{\sin x}{\cos x}$$

$$\cos x \left(\frac{\sin x}{\cos x} \right) = 1$$

$$\sin x = 1$$

$$x = \sin^{-1}(1)$$

$$x = \frac{\pi}{2} + 2\pi n$$

$$\cos x \neq 0$$

$$x \neq \cos^{-1}(0)$$

$$x \neq \frac{\pi}{2} + 2\pi n \quad \& \quad x \neq \frac{3\pi}{2} + 2\pi n$$

~~$x = \frac{\pi}{2} + 2\pi n$~~
 \emptyset

p.119 #2cf,4,6,9