Sec. 4.6 - 4.7

Inverse Trig Functions
Domain / Range

~~Story Prob?~~

Compositions of Trig functions

Law of Sines
* Ambiguous Case (SSA) ←

Story Problems

Law of Cosines - Start BIG

Heron's Formula - Area (SSS)

Area Formula (SAS)

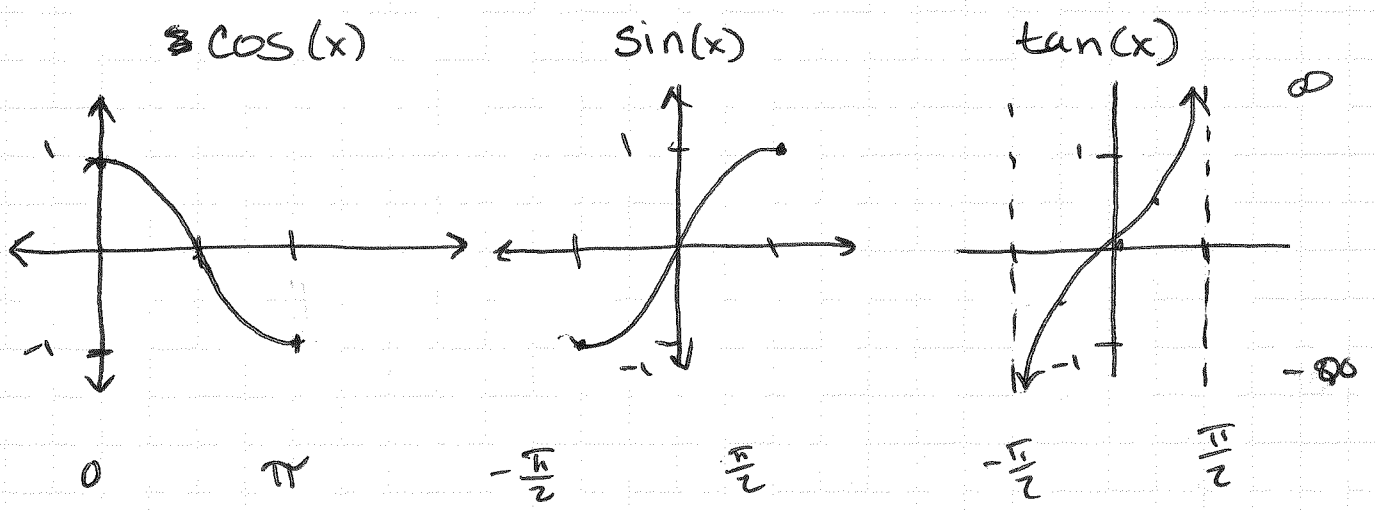
$\cos(\theta)$, $\sin(\theta)$, $\tan(\theta)$

Given angle, finding ratio

$\cos^{-1}(x)$ $\sin^{-1}(x)$ $\tan^{-1}(x)$

given ratio, finding angle

Inverses



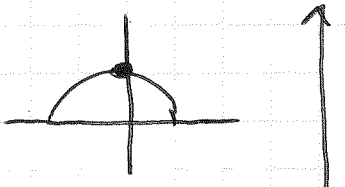
8 Inverse:

$\sin(\sin^{-1}(x)) = x$ } only if x is in the domain of the inside function

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

$$\sin\left(\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right) = \frac{\sqrt{3}}{2}$$

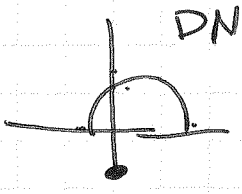
$$\cos^{-1}\left(\cos\frac{5\pi}{2}\right) = \frac{\pi}{2}$$



$$\frac{5\pi}{2} - \frac{2\pi}{2} = \frac{\pi}{2}$$

$$\cos^{-1}\left(\cos\frac{3\pi}{2}\right)$$

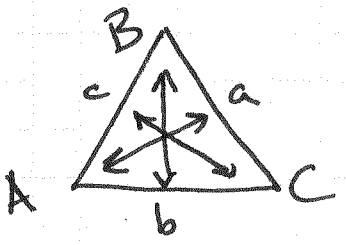
DNE



$\sin^{-1}(\cos(\frac{\pi}{2}))$ inside to outside

$\sin^{-1}(0) = 0$

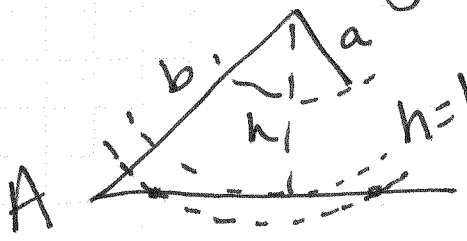
LoS



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

need opposite side/angle

Ambiguous Case SSA



$a<b$ - need h

$a<h$ 0Δ $a=h$ 1Δ $a>h$ 2Δ

$a>b$ 1Δ

Obtuse

$a<b$ 0Δ

$b<a$ 1Δ

LoC start w/ BIG side

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

A: $\frac{1}{2}bc\sin A$ $\frac{1}{2}ab\sin C$

$s = \frac{1}{2}(a+b+c)$

$A = \sqrt{s(s-a)(s-b)(s-c)}$

30s: SS-66, 77