

MTH-PT: Trigonometry Session 13 3/7

1.) $\cos \frac{3\pi}{4}$ $-\frac{\sqrt{2}}{2}$

2.) $\sin \frac{7\pi}{6}$ $-\frac{1}{2}$

3.) $\tan \frac{2\pi}{3}$ $-\sqrt{3}$

$\frac{\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}}{\cos \frac{2\pi}{3} = -\frac{1}{2}}$

4.) $\sec \frac{\pi}{3} = \frac{1}{\cos \frac{\pi}{3}} = \frac{1}{\frac{1}{2}} = 2$

2

5.) $\csc \frac{11\pi}{6}$ -2

$\frac{1}{\sin \frac{11\pi}{6}} = \frac{1}{-\frac{1}{2}} = -2$

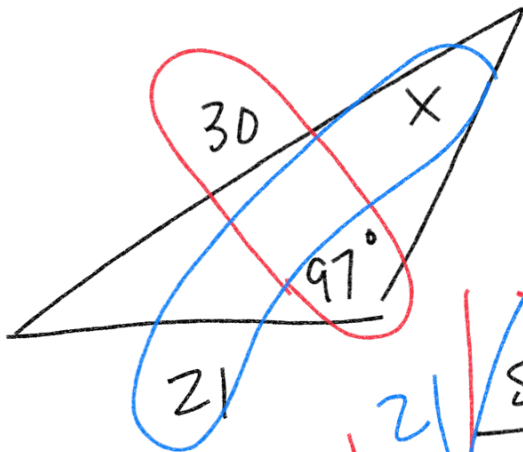
6.) $\cot \frac{7\pi}{4}$

$\frac{\cos \frac{7\pi}{4} = \frac{\sqrt{2}}{2}}{\sin \frac{7\pi}{4} = -\frac{\sqrt{2}}{2}} = -1$

-1

Law of Sines

Non-right triangle



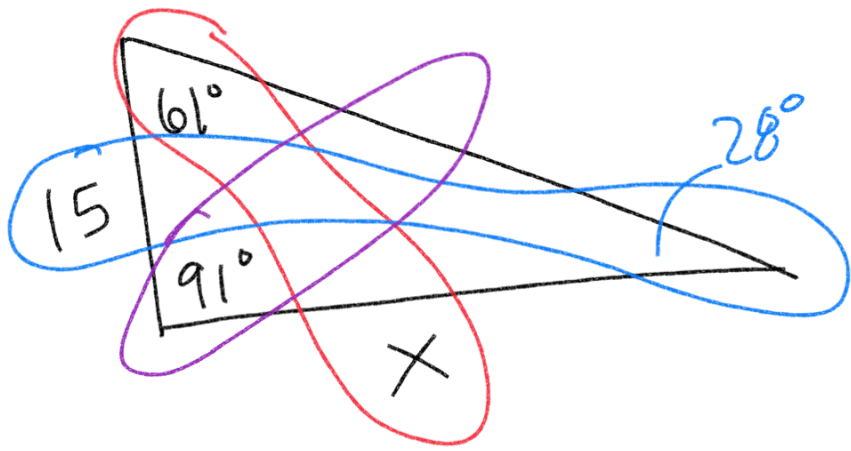
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$\frac{21 \sin 97}{30} = \sin X$

$\frac{\sin 97}{30} = \frac{\sin X}{21}$

$X = \sin^{-1} \left(\frac{21 \sin 97}{30} \right)$

44°



$$\frac{\sin 61^\circ}{X} = \frac{\sin 28^\circ}{15}$$

$$\frac{X \sin 28^\circ}{\sin 28^\circ} = \frac{15 \sin 61^\circ}{\sin 28^\circ}$$

$$180 = 91 + 61 + \square$$

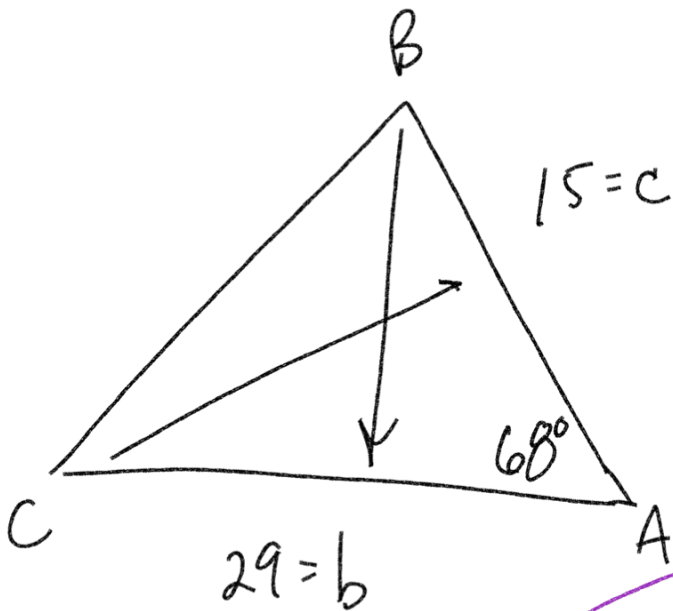
$$180 = 152 + \square$$

$$-152 \quad -152$$

$$28 = \square$$

$$X = \frac{15 \sin 61}{\sin 28^\circ}$$

$$X = 27.9$$



Notice: No angle-side pairing.

Law of Cosines
(like the Pythagorean Theorem)

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

Pythagorean

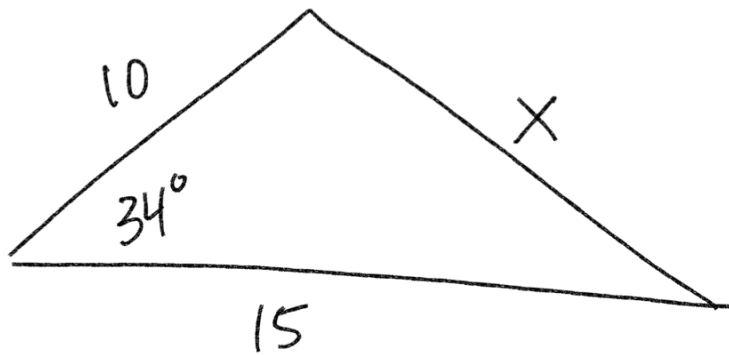
how it deviates

$$c^2 = 15^2 + 29^2 - 2(15)(29)\cos 68^\circ \text{ from right angle}$$

$$27.3$$

Law of cosines

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



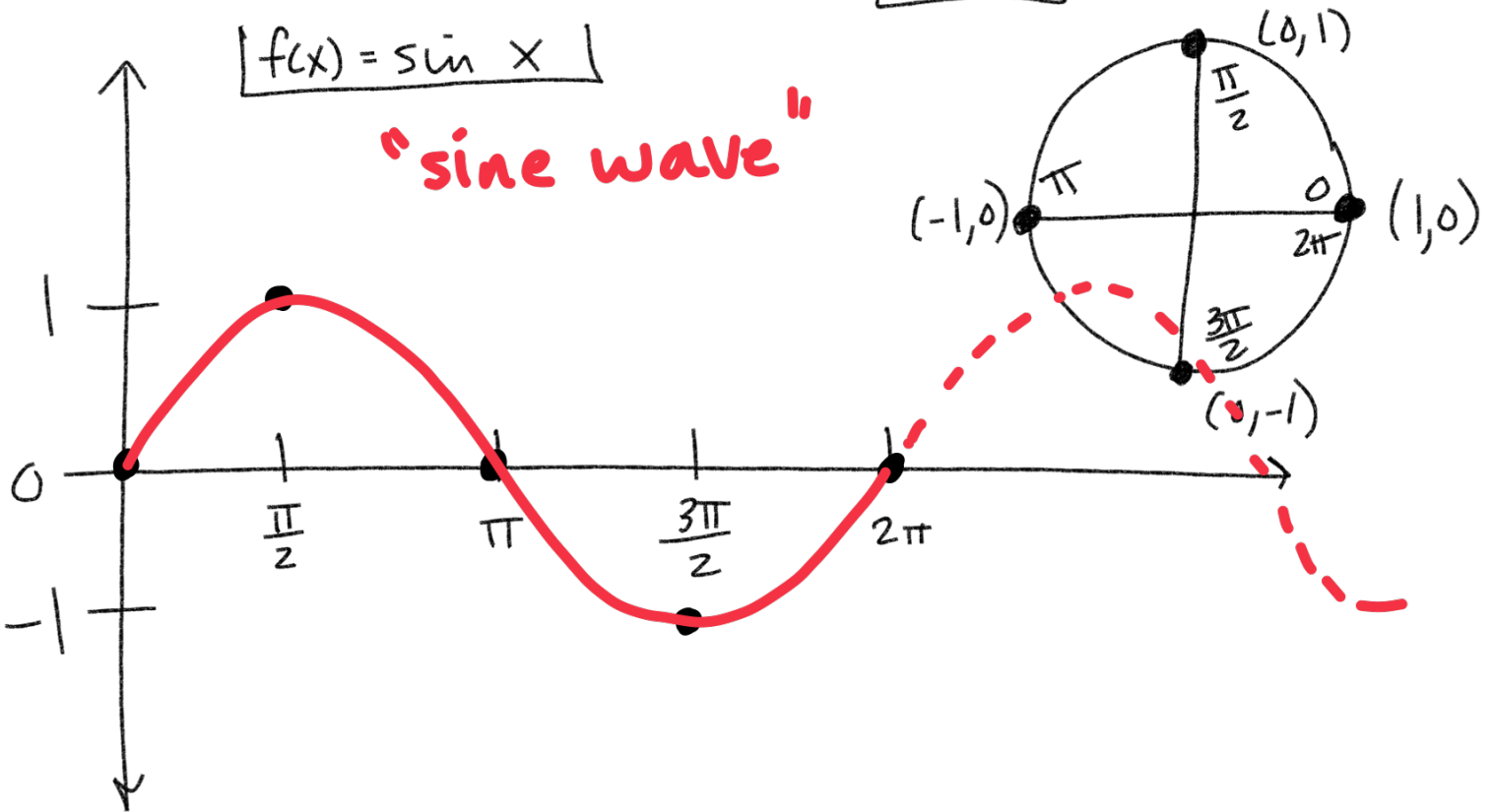
$$c^2 = a^2 + b^2 - 2ab \cos c$$

$$\downarrow$$
$$15^2 + 10^2 - 2(15)(10)\cos 34^\circ$$

8.7

$$|f(x) = \sin x|$$

"sine wave"



$$f(x) = \cos x$$

