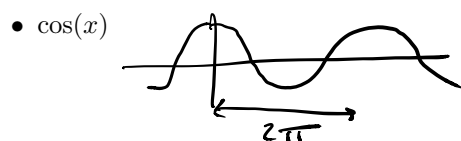
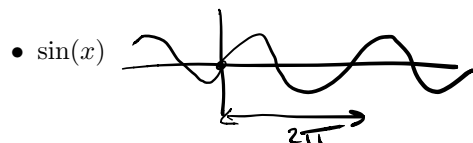


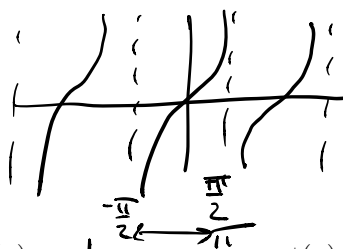
MATH 2B Review: Trigonometric Functions

Facts to Know:

Graphs of Basic Trig Functions:



- $\tan(x) = \frac{\sin(x)}{\cos(x)}$



Other Trig Functions: $\csc(x) = \frac{1}{\sin(x)}$

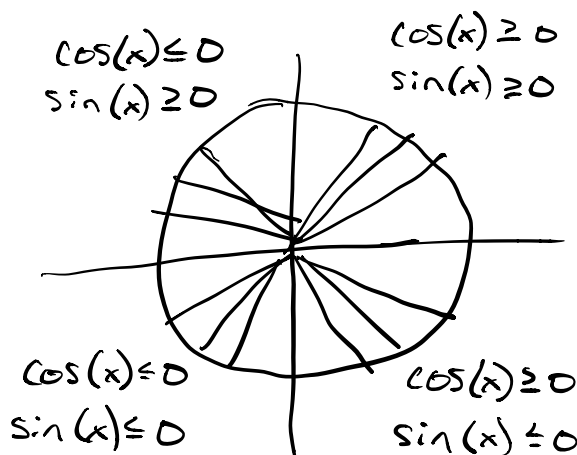
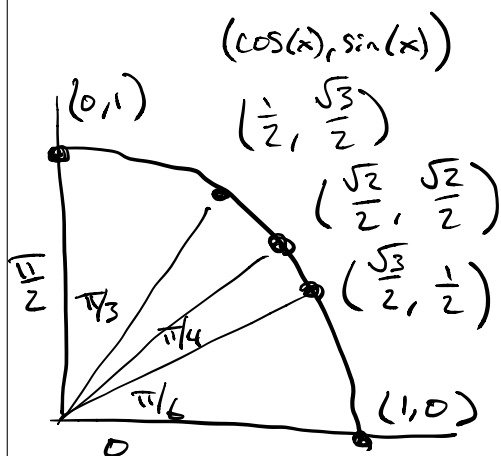
$\sec(x) = \frac{1}{\cos(x)}$

$\cot(x) = \frac{1}{\tan(x)}$

* Important Identity: $\sin^2(x) + \cos^2(x) = 1$ $\sin^2(x) = [\sin(x)]^2$
~~* $\sin(x)^2$~~

Double Angle Formulas: $\sin(2x) = 2\sin(x)\cos(x)$ $\cos(2x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)$

Unit Circle:



Examples:

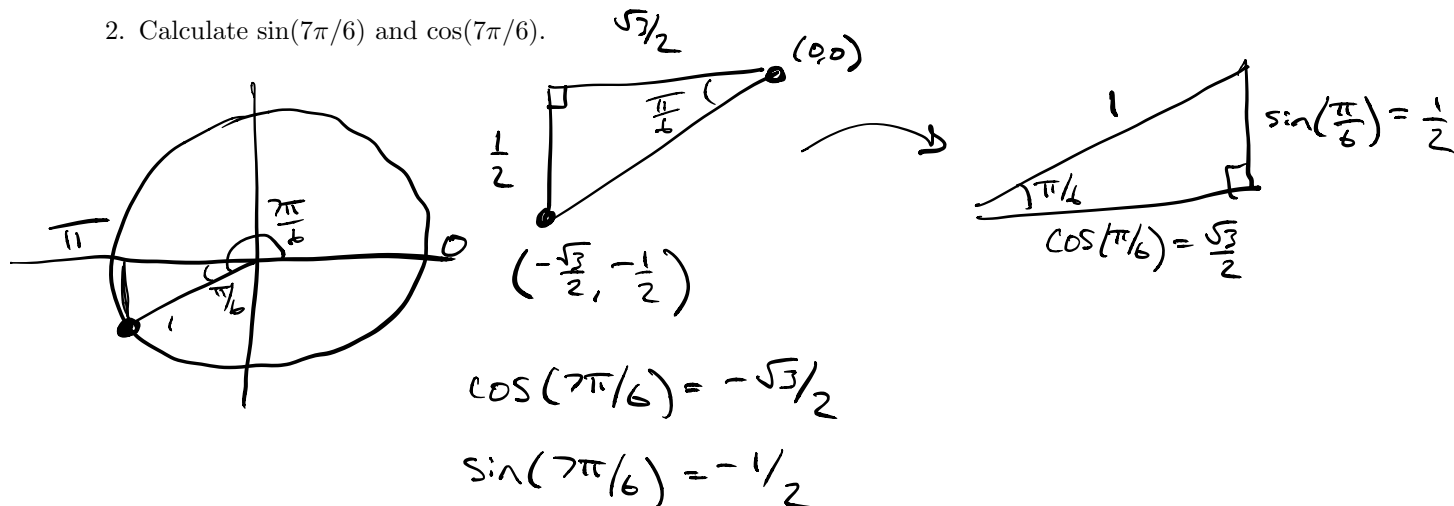
1. Show that $\tan^2(x) + 1 = \sec^2(x) \Leftrightarrow [\tan(x)]^2 + 1 = [\sec(x)]^2$

$$\left[\frac{\sin^2(x)}{\cos^2(x)} + \frac{\cos^2(x)}{\cos^2(x)} = \frac{1}{\cos^2(x)} \right]$$

We know $\sin^2(x) + \cos^2(x) = 1$, divide by $\cos^2(x)$.

$$\boxed{\tan^2(x) + 1 = \sec^2(x)}$$

2. Calculate $\sin(7\pi/6)$ and $\cos(7\pi/6)$.



3. Write $\sin^2(x)$ in terms of $\cos(2x)$.

$$\cos(2x) = 1 - 2\sin^2(x)$$

$$\underbrace{\cos(2x) - 1}_{-2} = \underbrace{-2\sin^2(x)}_{-2}$$

$$\boxed{\sin^2(x) = \frac{1}{2} (1 - \cos(2x)) = \frac{1 - \cos(2x)}{2}}$$