1. Sketch two periods of $\cos \theta$ and $\sin \theta$.

2. Determine the amplitude and period of the following functions:
   a. $f(x) = -2 \sin \left( \frac{x}{2} \right)$
   b. $f(x) = \frac{1}{3} \cos(2x)$.

3. Give the domain of $\tan \theta$ for $-\pi \leq \theta \leq \pi$.

4. Sketch two periods of the graphs of the following functions:
   a. $f(x) = 2 \cos \left( \frac{x}{2} \right)$
   b. $f(x) = -\frac{1}{2} \sin(2x)$

5. If we know $\tan x = \frac{1}{3}$ and $0 < x < \frac{\pi}{2}$, find $\cos(2x)$

**Extra Credit:**

1. Sketch one period of the graph of $f(x) = \frac{1}{4} \sin(x + \pi/2)$.

2. Verify that $\tan^2x + 1 = \sec^2x$ by using the identity $\sin^2x + \cos^2x = 1$. 