Activity 4
Math 112 (INTO OSU)

1. If $\cot \theta > 0$ and $\sin \theta < 0$, in which quadrant must $\theta$ lie?

2. Suppose $\sec \theta = \frac{5}{4}$ and $\sin \theta < 0$. Find the values of all 6 trigonometric functions of $\theta$.

3. Verify the identities

   (a) $(1 - \sin^2 \theta)(1 + \cot^2 \theta) = \cot^2 \theta$.

   (b) $\frac{\cot^2 \theta}{\csc^2 \theta} = \csc \theta - \sin \theta$. 

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4. Write $\cos x$ and $\sec x$ in terms of $\sin x$ if $\cos x < 0$.

5. Let the wattage consumed by an electromagnet be given by the formula $W(t) = 5\cos^2(120\pi t)$ and the voltage be given by the formula $V(t) = 25\sin(120\pi t)$, where $t$ is time in seconds. Express $W(t)$ in terms of the sin function. When $V(t)$ is at a maximum or minimum value what is the value of $W(t)$.