1. Compute the indefinite integral \( \int \frac{1}{x^2 \sqrt{100 - 4x^2}} dx \).

2. Compute the area of a circle of radius \( r \) by writing an equation for the circle, solving for \( y \), and then integrating.

Good problem left over from previous worksheet, if you have time:

3. Let \( \Gamma(n) = \int_{0}^{\infty} x^{n-1} e^{-x} \, dx \).
   
   (a) Find \( \Gamma(1) \).
   
   (b) Show that \( \Gamma(n + 1) = n\Gamma(n) \).
   
   (c) Use part (b) to find \( \Gamma(6) \).