1. Find the derivative of y with respect to the appropriate variable.
   a. $y = t^2 \tanh \frac{1}{t}$
   b. $y = \ln x + \sqrt{1-x^2}\operatorname{sech}^{-1} x$
2. $\int_{\pi/4}^{\pi/3} \frac{\sec^2 z}{\tan z} dz$
3. $\int \frac{d\theta}{\sqrt{2\theta - \theta^2}}$
4. $\int_{-1}^{3} \frac{4x^2-7}{2x+3} dx$
5. $\int \frac{1}{1-\sec x} dx$
6. $\int_{\pi/2}^{\pi} \sqrt{1-\sin^2\theta} d\theta$
7. Use the definitions of $\cosh x$ and $\sinh x$ to show that

$$\cosh^2 x - \sinh^2 x = 1.$$