The assigned homework exercises after Test 3 form the coverage for Test 3. The following items are additional practice problems.

1. Evaluate the integral.
   
   (a) \( \int_{0}^{\pi/3} \frac{\sin(3x)}{\sqrt{1 + \cos(3x)}} \, dx \)  
   \quad \text{answer: } \frac{2\sqrt{2}}{3}

   (b) \( \int_{1/6}^{1/3} \cot(\pi x) \, dx \)  
   \quad \text{answer: } \frac{\ln(3)}{2\pi}

   (c) \( \int_{\pi/8}^{\pi/6} \sec^2(2x)e^{\tan(2x)} \, dx \)  
   \quad \text{answer: } \frac{1}{2}(e^{\sqrt{3}} - e)

   (d) \( \int \frac{dx}{3x^2 - 6x + 15} \)  
   \quad \text{answer: } \frac{1}{6} \arctan\left(\frac{x-1}{2}\right) + C

   (e) \( \int_{2}^{3} \frac{dx}{\sqrt{4x - x^2}} \)  
   \quad \text{answer: } \frac{\pi}{6}

2. Evaluate the derivative of the function.
   
   (a) \( f(x) = \ln(|\sec(x) + \tan(x)|) \)  
   \quad \text{answer: } \sec(x)

   (b) \( f(x) = \ln\left(\frac{e^{2x} - 1}{e^{2x} + 1}\right) \)  
   \quad \text{answer: } \frac{2e^{2x}}{e^{2x} - 1}

   (c) \( f(x) = \frac{x^2 - 2}{x^2 + 1} \)  
   \quad \text{answer: } \frac{6x^2}{(x^2+1)^2}

3. Sketch and shade the region bounded by the graphs of \( y = x^2 \) and \( y = 8\sqrt{x} \).
   
   A solid is generated when the region is revolved about the \( x \)-axis. Evaluate the volume of the solid.

   \( \text{answer: } \frac{1536\pi}{15} \)