[Quiz 4, Due Monday, February 11th]   **Name:**

1. Integrate:

   (a) $\displaystyle \int \frac{y^2}{(1-y^2)^{3/2}} dy$

   (b) $\displaystyle \int_0^{\pi/3} \sec^3 \theta \tan \theta \ d\theta$

   (c) $\displaystyle \int \frac{x^2 + 8x + 18}{(x+3)^3} dx$

   (d) $\displaystyle \int \ln(\sin t) \sin t \cos t \ dt$

2. Let R be the unbounded region in the fourth quadrant between the curves

$$x = 0, \ y = 0, \ y = \ln x.$$

   Find the volume of the solid obtained by rotating R around

   (a) the x-axis,
   (b) the y-axis.

   Note that these are both improper integrals!