142 Quiz 4

1. Consider the region bounded by $y = \ln x$, $x = 0$ and $x = 1$. Draw the region. Consider the solid generated by revolving the region about the axis $y = -3$. Find an integral representing the volume of the solid.

2. Compute the expressions

   (a)
   $$\int \frac{x}{2x^2 + 3}\, dx.$$

   (b)
   $$\frac{d}{dx} x^{\cos(x)} \quad \text{where } x > 0.$$