1. In exercise 11 of section 7.2, you integrated \( \int (\ln x)^2 \, dx \). Now try \( \int \ln(x^2) \, dx \).

2. Find the volume of the solid obtained when the region bounded by \( y = \cos x \), \( y = 0 \), \( x = 0 \), and \( x = \frac{\pi}{2} \) is revolved about the y-axis.

3. Find the arc length of the curve \( y = \ln(\cos x) \) over the interval \([0, \pi/4]\).