

Find the following indefinite integrals (You need to show your work)

1.  $\int (\cos x)e^x dx$
2.  $\int xe^{5x} dx$
3.  $\int \ln x dx$
4.  $\int \frac{\ln x}{x} dx$
5.  $\int 5x\sqrt{4x^2 + 3} dx$

Find the following volume of the solid of revolution with respective regions and axis.  
[Set up a proper integral, you do not need to evaluate the integral.]

1. Bounded by  $y = \frac{4}{x}$ ,  $x = 1$ ,  $x = 4$  and  $x$ -axis;
  - a. rotating about  $y = -1$ .
  - b. rotating about  $x = -1$
2. Bounded by  $y = x^3$ ,  $y = \sqrt[3]{x}$ , and  $x \geq 0$ .
  - a. Use both disc and shell methods to set up the integrals by rotating the bounded region about  $y = 2$ .
  - b. Use both disc and shell methods to set up the integrals by rotating the bounded region about  $x = -2$ .
3. Maple (due Monday march 22 in class, bring your printouts-no exception!)
  - a. Show that both methods used in 2(a) yield the same answer.
  - b. Show that both methods used in 2(b) yield the same answer.