

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.