Calculus II
Practice Problems 4

1. Integrate $\int (\ln x)^2 dx$.

2. Integrate $\int x^2 \ln x dx$.

3. Integrate $\int \arccos x dx$.

4. If the region in the first quadrant bounded by the curves $y = 1,\ y = e^x$ and $x = 1$ is rotated about the y-axis, what is the volume of the resulting solid?

5. Integrate $\int \sec^3 x dx$.

6. Integrate (a) $\int \frac{(x+1)dx}{x(x+3)}$ (b) $\int \frac{(x+1)dx}{x^2(x+3)}$

7. Integrate $\int \frac{dx}{(x-1)(x+2)^2}$.

8. Integrate $\int \frac{(x^2-1)dx}{(x^2+1)(x+3)}$.

9. Integrate $\int \frac{x^2 dx}{\sqrt{9-x^2}}$.

10. Integrate $\int \frac{x^2 dx}{\sqrt{9+x^2}}$.