Problem Set
Section: 7.1

Integration by Parts

$$\int udv = uv - \int vdu$$

$$\int_a^b udv = uv|_a^b - \int_a^b vdu$$

Problem 1

Find the integral $\int x^3 e^x dx$.

Problem 2

Find the area of the region bounded by the curves $y = x\sec^2 x$ and the lines $x = 0, x = \frac{\pi}{4}$, and $y = 0$.

Problem 3

Find the integral $\int e^{-x} \sin 2x dx$.

Problem 4

Find the integral $\int e^{2x} \sin e^x dx$.

Problem 5

Find the integral $\int \frac{\log_3(x^2)}{x} dx$.

Problem 6

Find the volume generated by the rotating the region bounded by the curves $y = \ln x, y = 0$ and $x = 2$ about y-axis.