

MAT126, Paper Homework 3

1. A large tank of canola oil ruptures at a time $t = 0$ minutes, and the oil leaks out at a rate of $r(t) = 100e^{-0.01t}$ liters per minute. How much oil leaks out within the first hour?

2. Using integration by parts, show that for any positive integer n ,

$$\int x^n e^x dx = x^n e^x - n \int x^{n-1} e^x dx$$

Use the above formula to determine $\int x^4 e^x dx$