Lecture 24: Worksheet

Applications of integration

1 Find the cumulative distribution function

$$F(x) = \int_{-\infty}^{x} f(t) \, dt .$$

of the exponential distribution in the case $f(x) = 2 \exp(-2x)$.

2 Find the moment of inertia of a rod which has density $f(x) = x$ and length 10.

$$\int_{0}^{L} x^2 f(x) \, dx .$$

3 A light bulb produces $100W$. How much energy in kw/Hours does it use in 1 year? Assume you pay 10 cents for each kW/h. How much does it cost?