INTRODUCTION TO CALCULUS

MATH 1A

Unit 32: Worksheet

Problem 1: Verify that the function $f(x) = \frac{1}{x}$ is a probability density function on $[1, e]$. This means $\int_1^e f(x)\, dx = 1$ and that f is non-negative.

Problem 2: Find the expectation

$$m = \int_1^e x f(x)\, dx$$

of this distribution function f.

Problem 3: Find the variance

$$\int_1^e x^2 f(x)\, dx - m^2$$

of f.