

Problem Set 9

MATH 16B Spring 2016

28 April 2015

Exercise. For the following continuous random variables (given in terms of their probability distribution function), calculate the probability given.

(a) $f(x) = 3x^2, 0 \leq x \leq 1$. What is $P(0 \leq X \leq \frac{1}{2})$?

(b) $f(x) = \frac{\sin x}{2}, 0 \leq x \leq \pi$. What is $P(\frac{\pi}{3} \leq X \leq \pi)$?

Exercise. Find the expected value and variance of each of the following continuous random variables (given in terms of their probability density function).

(a) $f(x) = 5e^{-5x}, x \geq 0$.

(b) $f(x) = 12x^2(1 - x), 0 \leq x \leq 1$.