Cüneyt Erem
Sheikh Mastura Farzana
Md Emtazul Haque

This is very hard to read!

theory;

3)

a) pdf shows how continues random variables are distributed for probability of events between x_1 and x_2 such that

$$Pr[\{x: x_1 \le x \le x_2\}] = \int_{x_1}^{x_2} p(x)\,dx$$

- cdf shows cumulative distribution for the function by integration of pdf is defined by

$$P(x) = Pr\{X \le x\} = \int_{-\infty}^{x} p(x')\,dx'$$ ✓

so pdf is rate of change for cdf such that

$$dP(x) = p(x)\,dx \iff p(x) = \frac{dP(x)}{dx}$$

cdf for between a and b;

$$P(a \le X \le b) = \int_a^b p(x')\,dx' = P(a) - P(b)$$ where if $b = a$ then $P(a \le X \le a) = 0$.

b) P[0<x≤1.5]

~~cdf is P(x)~~

$$= \int_0^1 x\,dx + \int_1^{1.5} (-x+2)\,dx$$

$$= \frac{x^2}{2}\Big|_0^1 + \left(-\frac{x^2}{2} + 2x\right)\Big|_1^{1.5}$$

$$= \frac{1}{2} - 0 + \left(-\frac{9}{8} + 3\right) - \left(-\frac{1}{2} + 2\right)$$

$$= \frac{7}{8}$$ ✓

Practical Part

Assignment 1) Monte-Carlo Integration
a) 2/2
b) 1/1

Assignment 2) Importance Sampling
a) 2/2
b) 2/2
c) 2/2
d) 0/1 (missing)

9/10

Theoretical Part

Assignment 3) Cumulative Distribution Function
a) 1/1
b) 2/2

2.5/3 (-0.5 for readability)