ASTU, PCE 6205 (Stochastic Model, Estimation and Control) Mid Exam. Dec.11, 2021

Name Section

1. Let us a fair die throw one time. In this experiment, we may construct a probability space.

%% : Def.1.12 %%

* 1. Construct if we consider an event is

Sol: let then

* 1. Construct if we consider events as

Sol:

1. If a pdf of a R.V.
2. Find

Sol: ,

1. Find the varience

Sol:

%%% using matlab

clear all; clc;

f =(@(x) (1/2)\* exp(-x/2));

integral(f, 0, inf)

g =(@(x) x.\*(1/2).\* exp(-x/2));

integral(g, 0, inf)

h =(@(x) x.^2.\*(1/2).\* exp(-x/2));

integral(h, 0, inf)

1. Given two R.V.’s whose pdf’s are and and they are independent. Define anther R.V. as

Find the pdf of given

Sol:

0 1 y

-1 0 x x

z-1 z 1 x

 Plot:

1. Give a function as
   1. Determine for to be a pdf

Sol:

x

y

y’

1

1

y’

a

-. for

-.

-. for

-. All together summed should be equal to 1

which implies

* 1. Find

Sol:

* 1. Find

Sol:

%% check

1. Let consider a R.P. , which satisfies the following conditions.

with statistical conditions

, and and are independent

* 1. Find

Sol:

1. Take the at the both sides,

Hence

1. The variance

Hence

* 1. Find

Sol: