# Problem 1

Answer to the problem goes here.

1. Problem 1 part 1 answer here.

Which is the pdf of exponential distribution (

1. Problem 1 part 2 answer here.

Which is the pdf of gamma distribution .

1. Problem 1 part 3 answer here
2. Problem 1 part 4 answer here

Which is pdf of uniform distribution U(0, y).

# Problem 2

Answer to the problem goes here.

1. Problem 2 part 1 answer here.

Which is the pdf without constant part of gamma distribution (4,)

The posterior distribution follows gamma distribution with parameters (4,) , that is (4,101.5)

# Problem 2 part 2 answer here:

As gamma mean is , and variance . In our case,

**Problem 3**

Answer to the problem goes here.

1. Problem 3(a) part 1 answer here
2. Problem 3(a) part 2 answer here
3. Problem 3(a) part 3 answer here
4. Problem 3(b) part 1 answer here

Therefore,

1. Problem 3(b) part 2 answer here

Which is the pdf without constant part of gamma distribution (, )

The posterior mean is , therefore the Bayes estimator is .