KFUPM	Term 162	Date: 7/5/2017
Mathematics & Statistics	AS 483	Duration: 25 minutes
	Quiz# 5	
Name:	ID #:	Section:

Q1: You are given:

(i) The probability that an insured will have exactly one claim is θ.

(ii) (ii) The prior distribution of θ has probability density function:

$$\pi(\theta) = \frac{3}{2}\sqrt{\theta}\ ,\ 0 < \theta < 1$$

A randomly chosen insured is observed to have exactly one claim.

Determine the posterior probability that θ is greater than 0.60.

Q2: Let $X_1, X_2, X_3 \ldots X_n$ be a random sample from Normal (θ, σ^2) and let θ be normal (μ, c^2).
Find the Bayes estimate of θ under the square error loss?

Q3: You are given:

(i) In a portfolio of risks, each policyholder can have at most one claim per year.
(ii) The probability of a claim for a policyholder during a year is q.
(iii) The prior density is

$$\pi(q) = \frac{q^3}{0.07} \ , \ 0.6 < q < 0.8$$

(iv) A randomly selected policyholder has one claim in Year 1 and zero claims in Year 2. For this policyholder, determine the posterior probability that $0.7 < q < 0.8$