

**43.** You are given:

- (i) The prior distribution of the parameter  $\Theta$  has probability density function:

$$\pi(\theta) = \frac{1}{\theta^2}, \quad 1 < \theta < \infty$$

- (ii) Given  $\Theta = \theta$ , claim sizes follow a Pareto distribution with parameters  $\alpha = 2$  and  $\theta$ .

A claim of 3 is observed.

Calculate the posterior probability that  $\Theta$  exceeds 2.

- (A) 0.33  
(B) 0.42  
(C) 0.50  
(D) 0.58  
(E) 0.64