11. You are given:

(i) Losses on a company's insurance policies follow a Pareto distribution with probability density function:

$$f\left(x|\theta\right)=\frac{\theta}{\left(x+\theta\right)^2},\quad 0<x<\infty$$

(ii) For half of the company's policies $\theta=1$, while for the other half $\theta=3$.

For a randomly selected policy, losses in Year 1 were 5.

Determine the posterior probability that losses for this policy in Year 2 will exceed 8.

(A) 0.11

(B) 0.15

(C) 0.19

(D) 0.21

(E) 0.27