

79. Losses come from a mixture of an exponential distribution with mean 100 with probability p and an exponential distribution with mean 10,000 with probability $1 - p$.

Losses of 100 and 2000 are observed.

Determine the likelihood function of p .

$$(A) \quad \left(\frac{pe^{-1}}{100} \cdot \frac{(1-p)e^{-0.01}}{10,000} \right) \cdot \left(\frac{pe^{-20}}{100} \cdot \frac{(1-p)e^{-0.2}}{10,000} \right)$$

$$(B) \quad \left(\frac{pe^{-1}}{100} \cdot \frac{(1-p)e^{-0.01}}{10,000} \right) + \left(\frac{pe^{-20}}{100} \cdot \frac{(1-p)e^{-0.2}}{10,000} \right)$$

$$(C) \quad \left(\frac{pe^{-1}}{100} + \frac{(1-p)e^{-0.01}}{10,000} \right) \cdot \left(\frac{pe^{-20}}{100} + \frac{(1-p)e^{-0.2}}{10,000} \right)$$

$$(D) \quad \left(\frac{pe^{-1}}{100} + \frac{(1-p)e^{-0.01}}{10,000} \right) + \left(\frac{pe^{-20}}{100} + \frac{(1-p)e^{-0.2}}{10,000} \right)$$

$$(E) \quad p \cdot \left(\frac{e^{-1}}{100} + \frac{e^{-0.01}}{10,000} \right) + (1-p) \cdot \left(\frac{e^{-20}}{100} + \frac{e^{-0.2}}{10,000} \right)$$