# Problem 150

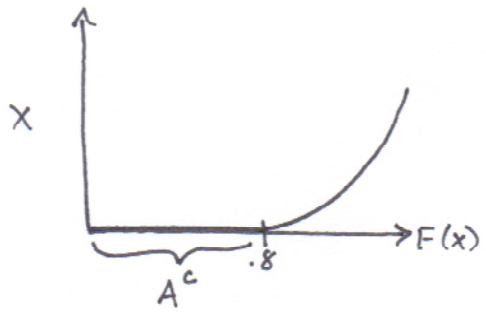
A: Accident $\quad p(A^c) = .8 \quad p(A) = 1 - .8 = .2$

X: loss amount before deductible (d)

$d = 500$

$$X|A \sim \text{Exponential}\ (\theta = 3000)$$

$$f(X|A) = \frac{1}{3000} \cdot e^{-\frac{x}{3000}}$$




Payout $= X - 500 \qquad X > 500$

$\frac{.95 - .8}{.2} = .75$

$$.75 = \int_0^y f(X|A) \cdot dx$$

$$.75 = \int_0^y \frac{1}{3000} \cdot e^{-\frac{x}{3000}} \cdot dx$$

$$.75 = 1 - e^{-\frac{y}{3000}}$$

$$y = 4159$$

Payout: $4159 - 500 = \underline{3659}$ $\boxed{B}$