

Exam P Problem 40

Solution:

* In an insurance policy, the deductible is the portion of any claim that is not covered by the insurance provider.

If the loss amount is less than the deductible, the insurance company pays nothing. Otherwise, the company pays the difference between the loss and deductible.

* Denote the loss amount by the random variable X . Then Denote the insurance payment by the random variable Y . Then

$$Y = \begin{cases} 0 & \text{if } 0 \leq X \leq c \\ x - c & \text{if } c < X < 1 \end{cases}$$

Given:

$$.64 = \Pr(Y < .5) = \Pr(0 < X < .5 + c)$$

$$\text{Given: } f(x) = \begin{cases} 2x & \text{for } 0 < x < 1 \\ 0 & \text{otherwise.} \end{cases}$$

$$.64 = \int_0^{.5+c} 2x \, dx = x^2 \Big|_0^{.5+c} = (.5+c)^2$$

Therefore, solving for c

$$.5 + c = \pm .8 \Rightarrow c = \pm .8 - .5$$

Finally, since $0 < c < 1$, we have $c = .3$

B