

[3-CAS.F03.19] For a loss distribution where $x \geq 2$, you are given:

- (i) The hazard rate function: $h(x) = \frac{z^2}{2x}$, for $x \geq 2$ $f(x) = 0 \quad x < 2$
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- (ii) A value of the distribution function: $F(5) = 0.84$.

Calculate z .

A. 2

B. 3

C. 4

D. 5

E. 6

$$S(x) = e^{-H(x)}$$

$$S(5) = 1 - F(5) = .16 = e^{-H(5)}$$

$$H(5) = -\ln(.16) = \frac{z^2}{2} \ln(2.5)$$

$$\boxed{z = 2}$$

$$H(5) = \int_2^5 h(x) dx$$

$$= \int_2^5 0 dx + \int_2^5 \frac{z^2}{2x} dx = \frac{z^2}{2} \ln x \Big|_2^5 = \frac{z^2}{2} \ln(2.5)$$