

69. Solution: D

The distribution function of an exponential random variable T with parameter θ is given by $F(t) = 1 - e^{-t/\theta}$, $t > 0$

Since we are told that T has a median of four hours, we may determine θ as follows:

$$\frac{1}{2} = F(4) = 1 - e^{-4/\theta}$$

$$\frac{1}{2} = e^{-4/\theta}$$

$$-\ln(2) = -\frac{4}{\theta}$$

$$\theta = \frac{4}{\ln(2)}$$

Therefore, $\Pr(T \geq 5) = 1 - F(5) = e^{-5/\theta} = e^{-\frac{5\ln(2)}{4}} = 2^{-5/4} = 0.42$