29. Solution: C

Let T denote the number of days that elapse before a high-risk driver is involved in an accident. Then T is exponentially distributed with unknown parameter λ . Now we are given that

$$0.3 = P[T \le 50] = \int_0^{50} \lambda e^{-\lambda t} dt = -e^{-\lambda t} \Big|_0^{50} = 1 - e^{-50\lambda}$$

Therefore, $e^{-50\lambda} = 0.7$ or $\lambda = -(1/50)\ln(0.7)$

It follows that $P[T \le 80] = \int_0^{80} \lambda e^{-\lambda t} dt = -e^{-\lambda t} \Big|_0^{80} = 1 - e^{-80\lambda}$

$= 1 - e^{(80/50)\ln(0.7)} = 1 - (0.7)^{80/50} = 0.435$.