

Question #105

Answer: A

$$\begin{aligned}d_0^{(\tau)} &= 1000 \int_0^1 e^{-(\mu+0.04)t} (\mu+0.04) dt \\ &= 1000 \left(1 - e^{-(\mu+0.04)}\right) = 48\end{aligned}$$

$$e^{-(\mu+0.04)} = 0.952$$

$$\mu + 0.04 = -\ln(0.952)$$

$$= 0.049$$

$$\mu = 0.009$$

$$\begin{aligned}d_3^{(1)} &= 1000 \int_3^4 e^{-0.049t} (0.009) dt \\ &= 1000 \frac{0.009}{0.049} \left(e^{-(0.049)(3)} - e^{-(0.049)(4)} \right) = 7.6\end{aligned}$$