

Question #188

Answer: D

$$S_0(t) = \left(1 - \frac{t}{\omega}\right)^\alpha$$

$$\mu_t = \frac{d}{dt} \log(S_0(t)) = \frac{\alpha}{\omega - t}$$

$$\dot{e}_x = \int_0^{\omega-x} \left(1 - \frac{t}{\omega-x}\right)^\alpha dt = \frac{\omega-x}{\alpha+1}$$

$$\dot{e}_0^{\text{new}} = \frac{1}{2} \times \frac{\omega}{\alpha^{\text{old}} + 1} = \frac{\omega}{\alpha^{\text{new}} + 1} \Rightarrow \alpha^{\text{new}} = 2\alpha^{\text{old}} + 1$$

$$\mu_0^{(\text{new})} = \frac{2\alpha^{\text{old}} + 1}{\omega} = \frac{9}{4} \times \frac{\alpha^{\text{old}}}{\omega} \Rightarrow \alpha^{\text{old}} = 4$$