

Question #281

Answer: C

$$\begin{aligned} & 140,000 \int_0^{30} {}_tP_{30} \mu_{30+t} {}_tP_{40} dt + 180,000 \int_0^{30} {}_tP_{40} \mu_{40+t} {}_tP_{30} dt \\ &= 140,000 \int_0^{30} \frac{1}{70} \frac{60-t}{60} dt + 180,000 \int_0^{30} \frac{1}{60} \frac{70-t}{70} dt \\ &= 140,000 \frac{1}{70} \frac{60^2 - 30^2}{2(60)} + 180,000 \frac{1}{60} \frac{70^2 - 40^2}{2(70)} = 115,714 \end{aligned}$$