Question #167
Answer: A

$$ {}_5p_{50}^{(\tau)} = e^{-(0.05)(5)} = e^{-0.25} = 0.7788 $$

$$ {}_5q_{55}^{(1)} = \int_0^5 \mu_{55+t}^{(1)} \times e^{-(0.03+0.02)t} dt = -(0.02/0.05)e^{-0.05t} \Big|_0^5 $$

$$ = 0.4\left(1 - e^{-0.25}\right) $$

= 0.0885

Probability of retiring before $60 = {}_5p_{50}^{(\tau)} \times {}_5q_{55}^{(1)}$

= 0.7788*0.0885

= 0.0689