

Show all work for full credit, and use correct notation.

1. Given $\int_{85}^{89} \mu_t dt = 0.3$ and $p_{89} = 0.9$, determine ${}_5p_{85}$.

2. Given $\int_0^{10} {}_t p_{30} \mu_{30+t} dt = 0.3$ and ${}_5 p_{35} = 0.84$, determine $\int_0^5 \mu_{30+t} dt$.

3. Given ${}_t p_x = e^{-0.02t}$, determine ${}^o e_x$.

4. Given ${}_tq_{70} = 1 - (0.9)^t$, determine e_{70} .

5. Given $\mu_x = A + B \cdot c^x$ where $A = 0.00022$, $B = 0.0000027$, and $c = 1.124$, determine ${}_{10}p_{20}$.