Ma 418 ~ Actuarial Mathematics I — Name: _____
Ch 2 - Notation/Formulas Homework

Sort out the following notation and prove each of the expressions. Also describe each term/formula in English language.

- ${}_tp_x + {}_tq_x = 1$

- ${}_{u|t}q_x = {}_up_x - {}_{u+t}p_x$

- ${}_{t+u}p_x = {}_tp_x \ {}_up_{x+t}$

- $\mu_x = -\frac{\frac{d}{dx}{}_xp_0}{{}_xp_0}$ and similarly $\mu_{x+t} = -\frac{\frac{d}{dt}{}_tp_x}{{}_tp_x}$

- ${}_tp_x = e^{-\int_0^t \mu_{x+s}ds}$

- ${}_tq_x = \int_0^t {}_sp_x\mu_{x+s}ds$