Each problem is worth 10 points. Show all work for full credit, and use correct notation.

1. Given \( t p_x = (0.95)^t \), determine \( \mu_{x+t} \)

2. Given \( \mu_x = \frac{1}{100-x}, \) \( 0 < t < 100 \), determine \( 20 p_{10} \)

3. Given \( \int_{50}^{54} \mu_x \, dx = 0.1 \) and \( \int_0^5 t p_{50} \mu_{50+t} \, dt = 0.1 \), determine \( q_{54} \)
4. Given $\mu_x^{ns} = \mu_x^s - .02$ and $p_x^{ns} = .95$, determine $p_x^s$

5. Given $\mu_x^m = 1.2\mu_x^f$ and $kp_x^f = .75$, determine $kp_x^m$