

**MATH 3630 - Actuarial Mathematics I**  
**Fall 2012 - Valdez**  
**Homework No. 2**  
**due Wednesday, 6:15 PM, 26 September 2012**

**Please return this page with your signature. Please write your name and student number at the spaces provided:**

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**Circle your class lecture:** 3–4:15 PM    5–6:15 PM

In a group of population consisting of half female and half male at birth, you are given that the survival function for female is

$$S_0^f(x) = \left(1 - \frac{x}{100}\right)^{1/3}, \quad \text{for } 0 \leq x \leq 100,$$

while that for male is

$$S_0^m(x) = \left(1 - \frac{x}{90}\right)^{1/2}, \quad \text{for } 0 \leq x \leq 90.$$

The superscripts  $f$  and  $m$  are to refer to female and male, respectively.

1. Calculate the proportions of surviving male and female at age 45.
2. Calculate the probability that a randomly selected person from this group who has reached age 45 will survive another 20 years, but then dies the following 10 years.