**CHAPTER 1**

**1.1**

1. Survival function
2. Conditions of survival functions:
4. or
5. is monotonically decreasing
6. If is continuous random variable, then

**1.2: Future lifetime random variable**

1. The conditional probability of surviving at age x+t, given survival to age x. (survival function for the future lifetime r.v)

**(Conditional probability)**

**1.3: Actuarial notations**

1. The probability that life age x now survive to t years from now:
2. The probability that life age x now die before attending age x+t:
3. The probability that age x now dies between age x+t and x+t+u. (deferred probability):

PROVE:

1. Relations between , ,

PROVE:

1. PROVE:
2. (proven)

**1.4: Curtate future lifetime random variable**

1. The probability mass function for

PROVE:

1. The cumulative distribution function for

**1.5: Force of mortality**

1. let
2. The force of mortality has two conditions:

**CHAPTER 2**

**2.1: Life table functions**

1. is radix is the expected number of individual who can survive to age x  
   we can use the value of and to express the survival function
2. is the expected number of death over age interval
3. Actuarial notation:
4. If t=1, then:

**2.2: Fractional age assumptions**

U=F(x), x has continuous distribution over [0,1)