LIFE INSURANCE
ASSIGNMENT N. 2

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EXERCISE 1

The function
$$S_0(t) = \frac{18000 - 110t - t^2}{18000}$$
has been proposed as survival distribution function for a newborn.

(1) Determine the limiting age;
(2) Verify that S_0 satisfies the properties of a survival probability function;
(3) Determine the survival probability distribution for a life aged 20;
(4) Calculate $_{20}p_0$, $_{10|10}q_{20}$, μ_{20+t};
(5) Describe the distribution of the curtate lifetime and determine the expected value of K_{75}.

EXERCISE 2

You are given the following life table extract:

Age (x)	l_x
51	90 901
52	89 948
53	89 089
54	88 176
55	87 208
56	86 181
57	85 093
58	83 094
59	82 719
60	81429

Calculate each of the following probabilities assuming (i) that the distribution of the fractional age is uniform in $[0, 1]$ and independent of the curtate lifetime (Assumption A) and (ii) that the mortality intensity is constant between consecutive ages (Assumption B):

(1) $_{0.2}p_{52.4}$
(2) $_{5.7}p_{52.4}$
(3) $_{3.2|2.5}p_{52.4}$

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