

Exercise 2.3

We are given

$$S_0(x) = \frac{1}{10}\sqrt{100-x} = \frac{(100-x)^{1/2}}{10}, \quad \text{for } 0 \leq x \leq 100.$$

The probability that a newborn will die between ages 19 and 36 is given by

$$\begin{aligned} {}_{19|17}q_0 &= \Pr[19 < T_0 \leq 36] = S_0(19) - S_0(36) \\ &= \frac{81^{1/2} - 64^{1/2}}{10} = \frac{1}{10} = 0.10. \end{aligned}$$