

- 18.6** You are doing a mortality study of insureds between ages 70 and 90. Two specific lives contributed this data to the study:

Life	Age at Entry	Age at Exit	Cause of exit
1	70.0	90.0	End of study
2	70.0	Between 89.0 and 90.0	Death

You assume mortality follows Gompertz law $\mu_x = B \times c^x$ and plan to use maximum likelihood estimation.

L is the likelihood function associated with these two lives.

L^* denotes the value of L if the Gompertz parameters are $B = 0.000003$ and $c = 1.1$.

Calculate L^* .

- (A) 0.0115
- (B) 0.0131
- (C) 0.0147
- (D) 0.0163
- (E) 0.0179

- 18.7** You are doing a mortality study of insureds between ages 60 and 90. Two specific lives contributed this data to the study:

Life	Age at Entry	Age at Exit	Cause of exit
1	60.0	74.5	Policy lapsed
2	60.0	74.5	Death

You assume mortality follows Gompertz law $\mu_x = B \times c^x$ and plan to use maximum likelihood estimation.

L is the log-likelihood function (using natural logs) associated with these two lives.

L^* denotes the value of L if the Gompertz parameters are $B = 0.000004$ and $c = 1.12$.

Calculate L^* .

- (A) -4.67
 - (B) -4.53
 - (C) -4.39
 - (D) -4.25
 - (E) -4.11
- 18.8** You are given the following seriatim data on survival times for a group of 12 lives. The superscript + indicates a right-censored value.

25, 32⁺, 35⁺, 36, 40⁺, 44, 48, 60, 62⁺, 65, 67, 70⁺

Calculate the standard deviation of the estimate of $S(50)$ using the Nelson-Aalen estimator.

- (A) 0.1455
- (B) 0.1519
- (C) 0.1547
- (D) 0.1621
- (E) 0.1650

[Question on October 2022 FAM-L Exam]