

Question #231

Key: A

The given interval for H can be written as $0.775 \pm 1.96\sqrt{0.063}$ and therefore the estimated variance of \hat{H} is 0.063. To apply the delta method,

$$S = e^{-H}; \quad \frac{dS}{dH} = -e^{-H}; \quad \hat{Var}(\hat{S}) \doteq (-e^{-\hat{H}})^2 Var(\hat{H}) = (-e^{-0.775})^2 (0.063) = 0.134.$$

The point estimate of S is $e^{-0.775} = 0.4607$ and the confidence interval is $0.4607 \pm 1.96\sqrt{0.0134} = 0.2269$ or (0.23, 0.69).