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5.5.R1

1/1 point (graded)

If we have n data points, what is the probability that a given data point does not appear in a bootstrap sample?

(1-1/n)^n ✔ **Answer:** (1-1/n)^n

$\left(1-\frac{1}{n}\right)^n$

Explanation

To construct a bootstrap sample, we repeatedly draw a single data point from a sample of size n, n times. Any given data point has a 1-1/n chance of not being selected in each draw. Hence, the chance of not being selected in any of the n draws is (1-1/n)^n

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Answers are displayed within the problem

https://stats.stackexchange.com/questions/88980/why-on-average-does-each-bootstrap-sample-contain-roughly-two-thirds-of-observat

(1-1/n)^n ~1/e ~ 1/3 as n goes to infinity => the chance of not being selected ~ 1/3
=> About two-thirds of the original data points appear in each bootstrap sample.