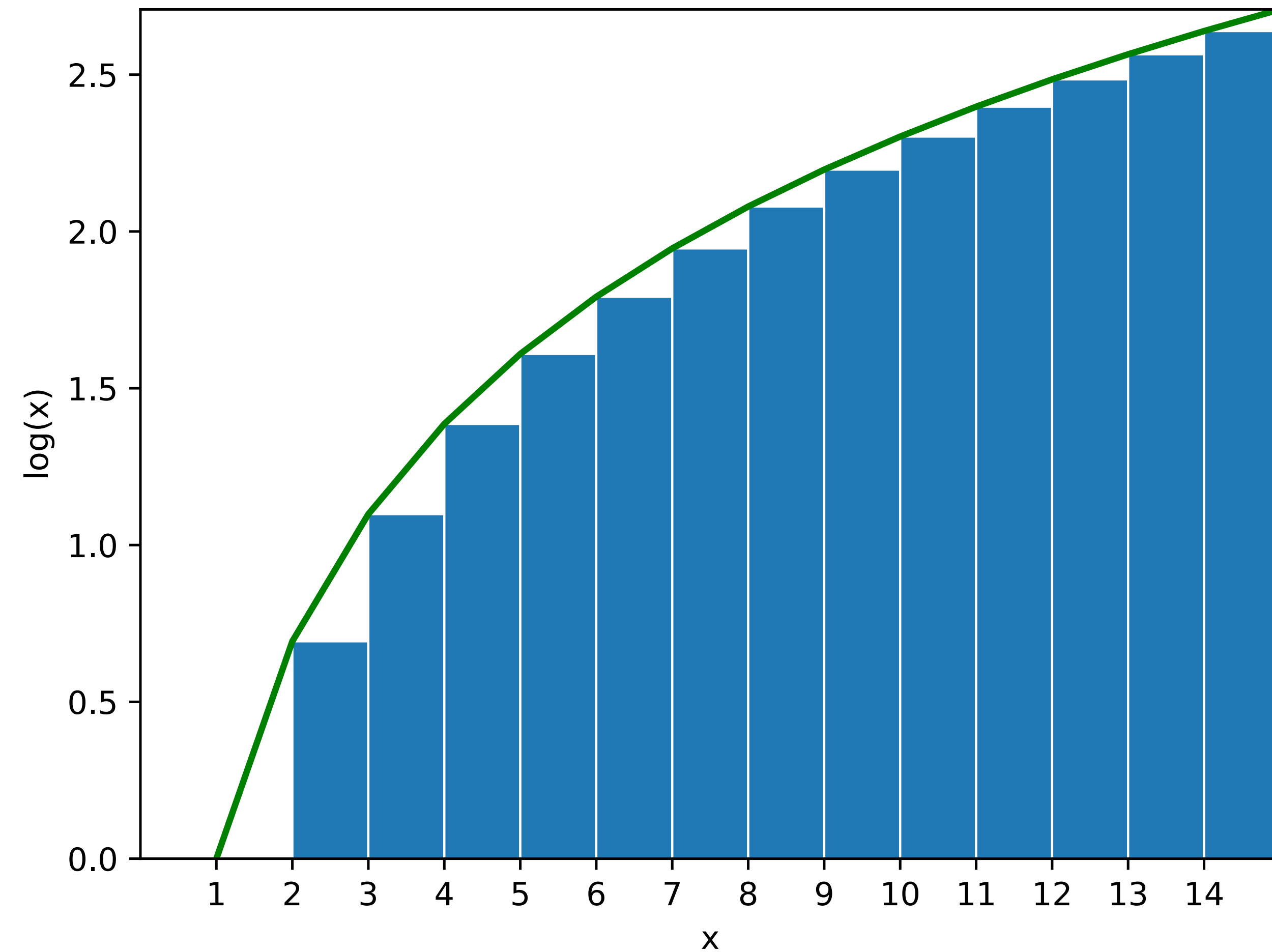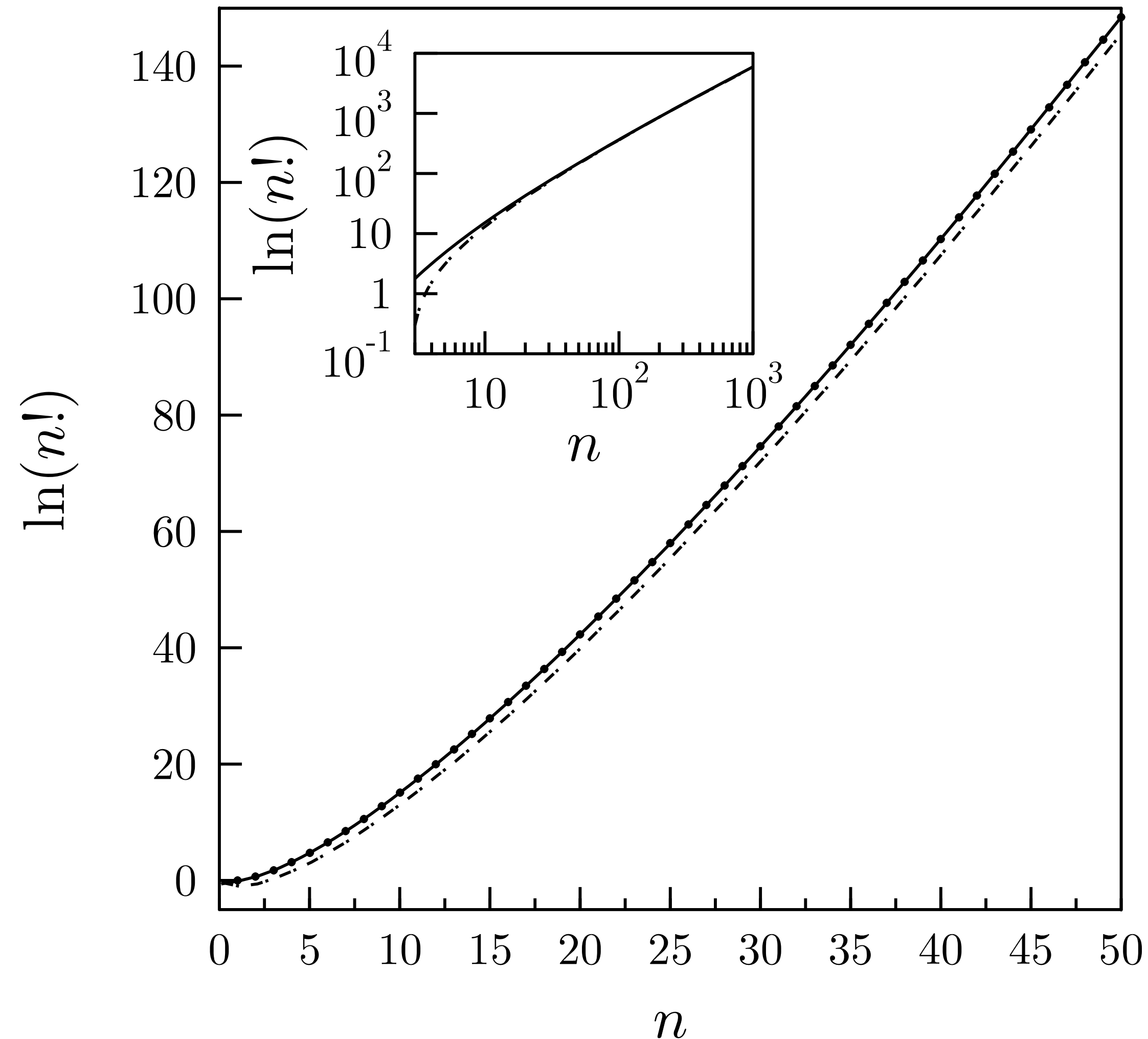# Deriving the Stirling approximation:

Replace the sum with integral

Accuracy of Stirling

- Points: $\log(n!)$
- Dashed: $n \log n - n$
- Solid: $\log(n^n e^{-n} \sqrt{2\pi n})$

We will used the dashed