# Number theoretic functions

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## 1 Summary

- **The prime counting function:**

$$\pi(x) = \#\{p \leq x \mid \text{p prime}\}.$$

- **The von Mangoldt function:**

$$\Lambda(n) = \begin{cases} \log p & \text{if } n = p^k \text{ for } p \text{ prime} \\ 0 & \text{else} \end{cases}$$

- **The first Chebyshev function** (or the **summatory von Mangoldt function:**)

$$\vartheta(x) = \sum_{n \leq x} \log p$$

- **The second Chebyshev function**:

$$\psi(x) = \sum_{n \leq x} \Lambda(n).$$