

CS2 101 10-21-25

11

• Thur. 10/23: mid I

exam: 9:50-10:55

break: 10:55-11:00

lecture: 11:00-11:25

• Paz: ext. (last) day to
Wed. 10 PM.

• Paz: Posted

Handout on Asymptotic growth rates

$$\bullet \log_b(n) = \frac{\ln(n)}{\ln(b)} \quad (b > 1)$$

• compare $\ln(n)$ to n^2

$$\begin{aligned} \lim_{n \rightarrow \infty} \left(\frac{\ln n}{n^2} \right) &= \lim_{n \rightarrow \infty} \frac{\frac{1}{n}}{2n} \\ &= \lim_{n \rightarrow \infty} \left(\frac{1}{2n^2} \right) = 0 \end{aligned}$$

$$\therefore \ln(n) = o(n^2)$$

$$\bullet n = o(n^2) : \lim_{n \rightarrow \infty} \frac{n}{n^2} = \lim_{n \rightarrow \infty} \frac{1}{n} = 0$$

✓

Exercise

show $f(n) = o(g(n))$ and $g(n) = o(h(n))$

imply $f(n) = o(h(n))$.