CS3383 Unit 0: Asymptotics Live

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Outline

Administrivia

Examples

Course Syllabus

- read it at https://www.cs.unb.ca/~bremner/teaching/cs3383/printable

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- Note discussion on plagiarism. This applies particularly to assignments and quizzes.

Course Delivery

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Tutorials W 09:30 GC122. Assignment solutions.

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Lectures MWF 13:30 GD124

Assignments

- weekly assignments

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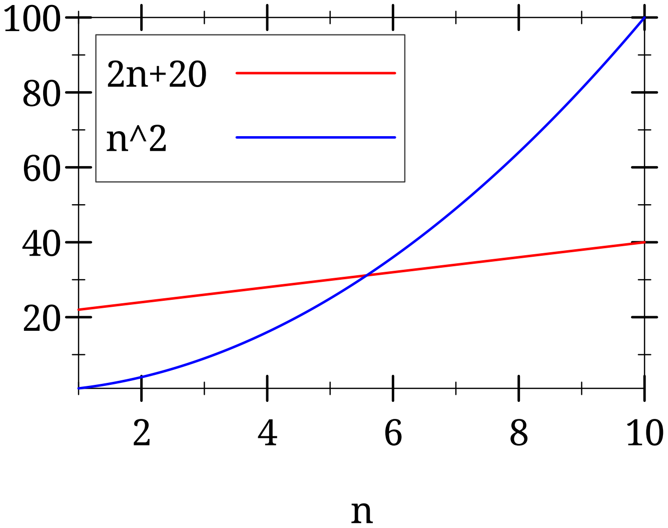
- roughly every second assignment will be online in D2L. (AKA Online Quiz).

Linear vs Quadratic



big-O example 1

Goal show $2n + 20 \in O(n^2)$

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Comment We can prove a smaller n_0 by finding crossing, but it's usually not worth it.

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New Goal $\forall n \geq n_0, 2n^2 \leq c \times n^3$

ignoring previous slides gave us n_0 and c.

observation this example gets very easy if we divide both sides by n^2

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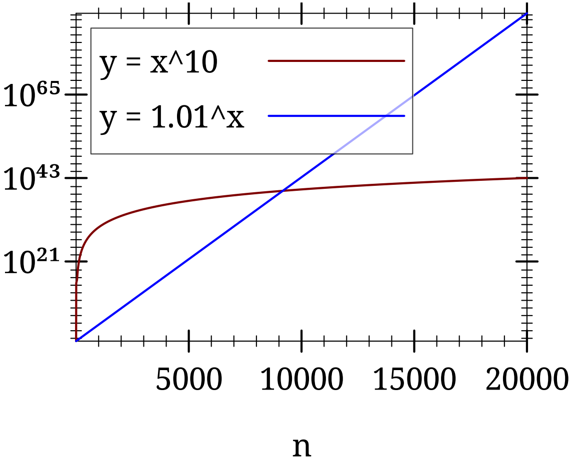
right $\frac{d}{dn}\lg n = 1/(\ln(2)n)$

Exponential versus Polynomial



$$\lim_{n\to\infty} n^b/a^n = 0 \ \forall a > 1$$

(CLRS3.13)

- How to prove?

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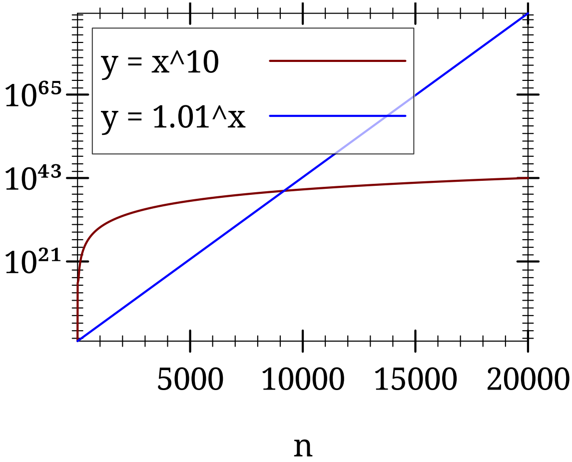

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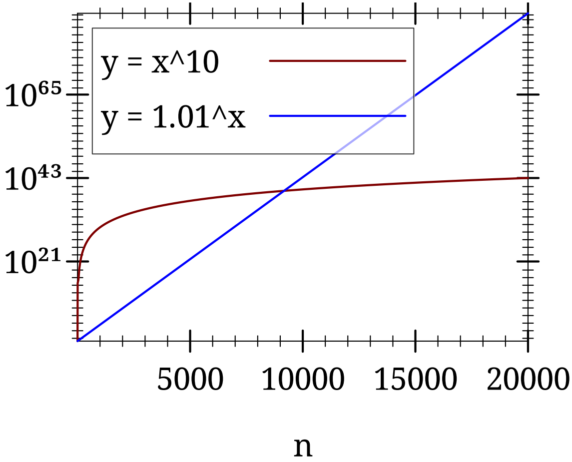

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- How to prove?
- How does it show $(1.01)^n \in \Omega(n^{10})$?
- Tune in next lecture...