Announcements

- Last homework: **HW11** on computability due May 1st

Section plans: week of May 4-5: quiz + review of material since the prelim

Final (cumulative): Saturday May 9th at 9am.

If you have a conflict, please fill out this form

Thursday May 7, 3-7pm, in Hollister B14: final review led by a few TAs

- Friday, May 1st: divide and conquer
- Monday, May 4th more review

TA applications are due May 3rd

- CS theory club: https://theoryclub.cs.cornell.edu/
- **Wednesdays at 5:00 PM — CIS 450**
- **5:00-5:30 PM:** Reception/Social
- **5:30-6:30 PM:** Talk
- Pizza provided!
- Talk today: **Joey Rivkin,** first-year PhD student in theoretical computer science **& our TA**.
- **Defying Gravity with Range Minimum Queries**

The Range Minimum Query problem asks: given an array of integers, how do we answer the query: "What is the minimum element between indices *i* and *j*?" We will see some beautiful ideas and data structures for answering many such queries efficiently, with runtimes that seem to defy ~~intuition~~ **gravity**.

Today: SAT is NP-complete

Recall Turing Machine (and the Church-Turing hypothesis)

Recall SAT

The Idea of the NP $\leq_p$SAT

List of variables to use

Join by Web **PollEv.com/evatardos772**

How many variables did we define so far, if n is the input size and m and T the bounds on the size of hint and the running time (with m and T bounded as a polynomial in and n). Recall that the size of the alphabet and the number of states are constants

A. $O(n+m)$

B. $O(T)$

C. $O(T^2)$

D. More than either

E. I have no clue

Constraints that should be true and how to write them as clauses