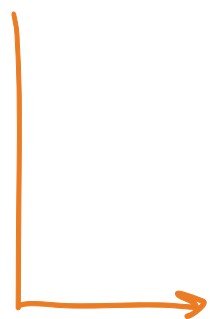


PREVIOUSLY...

MORDELL-WEIL
(over \mathbb{Q})

WEAK MORDELL-WEIL / K
DESCENT THEOREM
HEIGHTS (over \mathbb{Q})



$$E(\mathbb{Q}) \cong E(\mathbb{Q})_{\text{tors}} \oplus \mathbb{Z}^{\text{RANK OF } E(\mathbb{Q})}$$

TORSION SUBGROUP "FREE PART"

RANK OF $E(\mathbb{Q})$

TODAY: TORSION POINTS

and then canonical heights.

(VII.3.4) \Rightarrow Thm. Let K be a number field, E/k an ell. curve.

w/ $y^2 + a_1xy + a_3y = \dots$
such that $a_i \in \mathcal{O}_K$. Let $P \in E(k)$ be a pt

