The Néron-Tate Canonical Height

Def The (Néron-Tate) canonical height on $E(\mathbb{Q})$ is

$$\hat{h} : E(\mathbb{Q}) \longrightarrow \mathbb{R}$$

defined by

$$\hat{h}(P) = \frac{1}{\deg f} \lim_{N \to \infty} \frac{h_g([2^N]P)}{4^N}$$

where f is any non-constant even function on E (e.g., the x-coordinate).

Note: We proved the limit exists and it is independent of the choice of f.