$$\varphi : E \to E'$$

$$\varphi : E \rightarrow E'$$

Definition 2. The *kernel* $\ker \varphi$ are the points $P \in E$ that are mapped to infinity $\mathcal{O}' \in E'$. For all isogenies we will care about, the degree $\deg \varphi$ is equal to the size of $\ker \varphi$.

$$\ker \varphi := \{ \ P \in E \ \mid \ \varphi(P) = \mathcal{O}' \ \}.$$