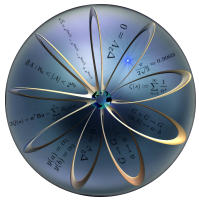

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Mordell curve

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Defines	Mordell curve

A *Mordell curve* is an elliptic curve E/K, for some field K, which admits a model by a Weierstrass equation of the form:

$$y^2 = x^3 + k, \quad k \in K$$

Examples:

1. Let $E_1/\mathbb{Q}$: $y^2 = x^3 + 2$, this is a Mordell curve with Mordell-Weil group $E_1(\mathbb{Q}) \simeq \mathbb{Z}$ and generated by $(-1, 1)$.

2. Let $E_2/\mathbb{Q}$: $y^2 = x^3 + 109858299531561$, then $E_2(\mathbb{Q}) \simeq \mathbb{Z}/3\mathbb{Z} \bigoplus \mathbb{Z}^5$. See `http://math.bu.edu/people/alozano/Torsion.html`generators here.

3. In general, a Mordell curve of the form $y^2 = x^3 + n^2$ has torsion group isomorphic to $\mathbb{Z}/3\mathbb{Z}$ generated by $(0, n)$.

4. Let $E_3/\mathbb{Q}$: $y^2 = x^3 + 496837487681$ then this is a Mordell curve with $E_3(\mathbb{Q}) \simeq \mathbb{Z}^8$. See `http://math.bu.edu/people/alozano/Mordell.html`generators here.

5. `http://www.maths.nott.ac.uk/personal/pmxtow/mordellc.htm`Here you can find a list of the minimal-known positive and negative k for Mordell curves of given rank, and the Mordell curves with maximum rank known (see BS-D conjecture).