Consider the curve $E : y^2 = x^3 + 1$ over $\mathbb{Q}$.

1. Check that $E$ is an elliptic curve over $\mathbb{Q}$.

2. Check that the points $(-1, 0)$ and $(0, 1)$ lie on the curve $E$.

3. Find the sum of the points $(-1, 0)$ and $(0, 1)$ (the formula is on page 170 of section IV.1 of the book).

4. Find the inverse of the point $(0, 1)$. 