Example 1.2. Parameterize the curve of intersection between the two surfaces

\[ x^2 + 2y^2 = 4 \]

and

\[ z - x^2 + y^3 = 1. \]

Solution.

The second surface is

\[ z = 1 + x^2 - y^3. \]

The strategy is to use one of the equations to parameterize one of the variables, then the other equation determines the other variable.

\[ x = \frac{2}{3} t \]

\[ y = \frac{3}{2} t \sin t \]

\[ z = 1 + (2 - \frac{3}{2} t) - \frac{3}{2} \sin^2 t. \]
Example 1.1. Let \( C \) be the circle of radius 2 with center \((4, 5)\). Give a clockwise parameterization of \( C \) beginning at the point \((4, 7)\).