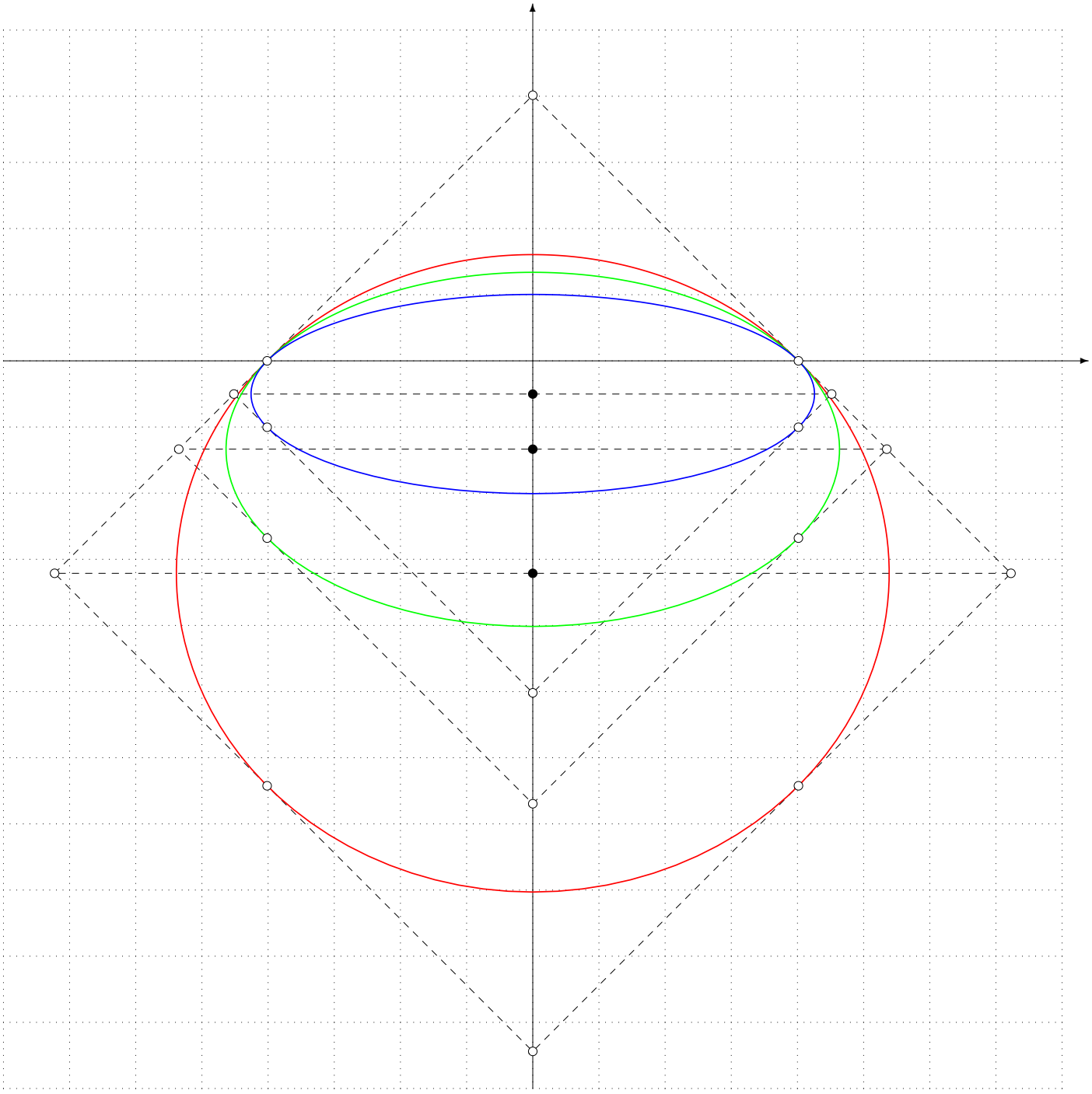
Ellipse Parameters



$w = 2/3$, $w = 1/2$, $w = 1/3$

We know the center $M = (x_m, y_m)$ and the values of a and b. We want to calculate the curve points P_0, P_1 and P_2 and the weight w to draw the ellipse. With $r = \sqrt{a^2 + b^2}$ we get:

$$P_0 = \begin{pmatrix} x_m - \dfrac{a^2}{r} \\ y_m + \dfrac{b^2}{r} \end{pmatrix} \quad P_1 = \begin{pmatrix} xm \\ ym + r \end{pmatrix} \quad P_2 = \begin{pmatrix} x_m + \dfrac{a^2}{r} \\ y_m + \dfrac{b^2}{r} \end{pmatrix} \quad w_0 = 1 \quad w_1 = \pm\frac{b}{r} \tag{1}$$

With these weights we can draw the ellipse with two segments. One segment uses the positive and the other the negative weight w_1.