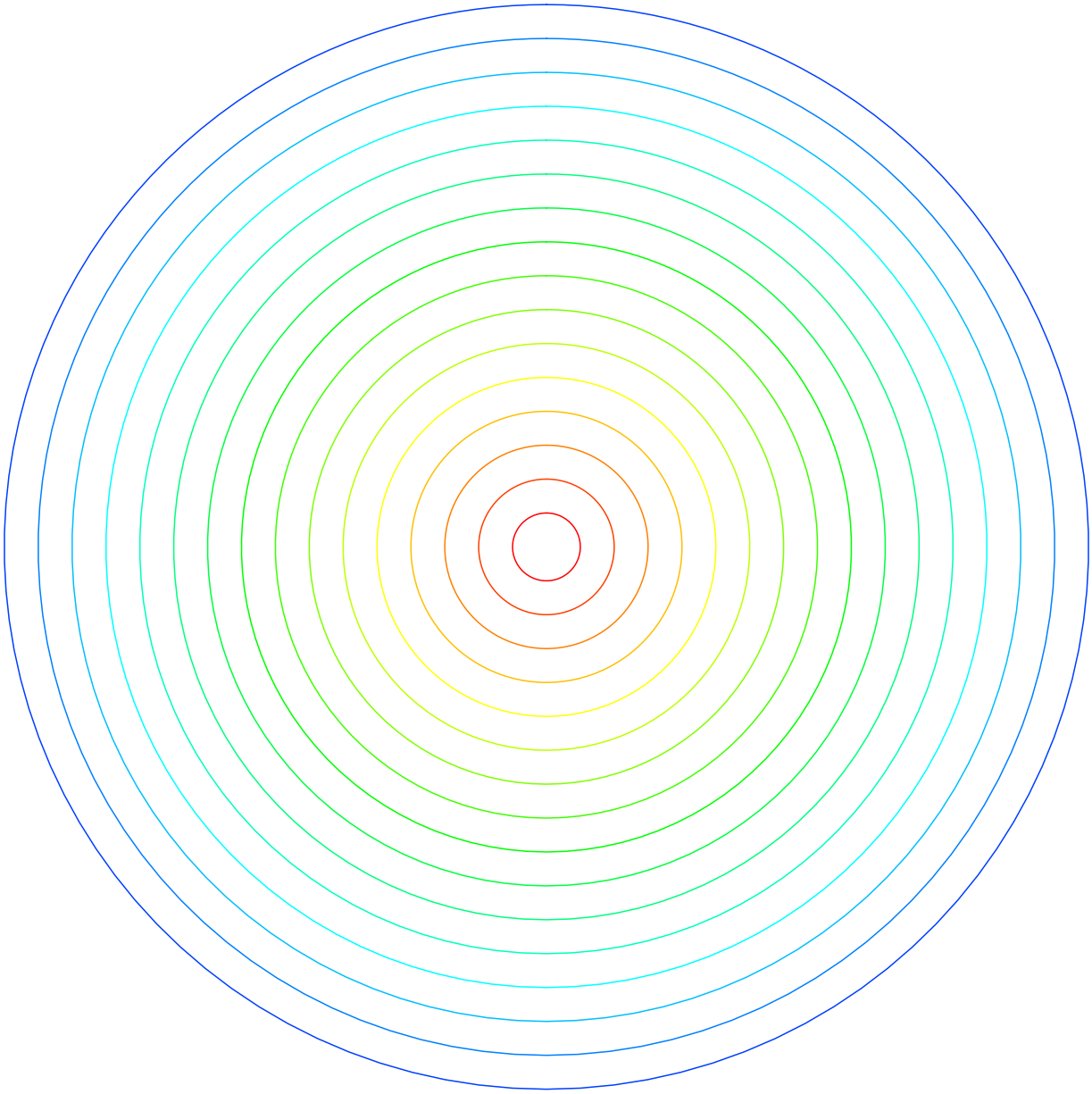
Quintic Circles



You can draw a full circle with one rational quintic Bezier curve. This is the lowest possible Bezier degree to do this. These are the control points for a circle at (x, y) with radius r (the third components are the weights):

$$P_0 = \begin{pmatrix} x \\ y+r \\ 5 \end{pmatrix}, P_1 = \begin{pmatrix} x+4r \\ y+r \\ 1 \end{pmatrix}, P_2 = \begin{pmatrix} x+2r \\ y-3r \\ 1 \end{pmatrix}, P_3 = \begin{pmatrix} x-2r \\ y-3r \\ 1 \end{pmatrix}, P_4 = \begin{pmatrix} x-4r \\ y+r \\ 1 \end{pmatrix}, P_5 = \begin{pmatrix} x \\ y+r \\ 5 \end{pmatrix}.$$