Polynomial knots are embeddings of $\mathbb{R}$ in $\mathbb{R}^3$, where the coordinate functions of the embedding are polynomials. The one-point compactification of such curves are topological knots. For a parametrization with polynomials of fixed degree, we investigate the space of coefficients of the polynomials. We find algebraic equations for the boundaries of regions corresponding to knots parameterized by various families of odd and even polynomials of degree at most seven. We also present an algebraic characterization of Reidemeister moves and present some conjectures and avenues for further investigation. (Received September 17, 2013)