

$$1 \text{ a) } p(x) = 0 \Leftrightarrow x^T A x + w^T x + b = 0$$

This yields an elliptic boundary. The positive definite matrix A determines the shape of the ellipse (rotation and stretching), b determines the "radius" and scaling and w determines the offset from the origin.

For $A = I$, $w = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$, $b = -2$ this yields a circle with center $(0,0)$ and radius 2.

