$$\det A = \begin{vmatrix} p_x & p_y & p_x^2 + p_y^2 & 1 \\ q_x & q_y & q_x^2 + q_y^2 & 1 \\ r_x & r_y & r_x^2 + r_y^2 & 1 \\ s_x & s_y & s_x^2 + s_y^2 & 1 \end{vmatrix}$$

$\det A = 0 \Leftrightarrow s$ on circle

$\det A > 0 \Leftrightarrow s$ inside circle

$\det A < 0 \Leftrightarrow s$ outside circle

Assuming p, q, and r make right turn.