\[
\frac{a}{c} + \left( \frac{b}{c} - \frac{ad}{c^2} \right) \frac{z}{\frac{a}{c} + \frac{d}{c}} = \frac{D}{c} \left( \frac{D}{c} \left( \frac{D}{c} (z) \right) \right)
\]

Wow!

So to prove that \( LF(P) \) leaves the family of lines and circles invariant involves merely convincing you that \( \frac{a}{c}, \frac{b}{c} \) and \( \frac{d}{c} \) do so.

What are "lines and circles"? They are the "loci" of these real equations:

\[
p(x^2 + y^2) + qx + ry + s = 0
\]

Where \( p, q, r, s \) are real, and we consider the set of all \((x, y)\) satisfying these equations. In complex "language",

\[
x^2 + y^2 = \overline{z \overline{z}}, \quad x = \frac{1}{2}(z + \overline{z}), \quad y = \frac{i}{2}(z - \overline{z})
\]

\[
p(x^2 + y^2) + qx + ry + s \text{ becomes } p(z \overline{z}) + \frac{q}{2}(z + \overline{z}) + \frac{r}{2i}(z - \overline{z}) + s = p(z \overline{z}) + \left( \frac{q - i r}{2} \right) z + \left( \frac{q + i r}{2} \overline{z} \right) + s.
\]

Conversely, if we consider those \( z \)'s so that \( z \& \overline{z} \) satisfy

\[
Pz \overline{z} + Qz + R\overline{z} + S = 0,
\]

then the "comes from"