Complex Conjugate Root (C)

If $p(z)$ is a polynomial with real coefficients, a and b are real numbers, and $p(a+bi) = 0$ then $p(a-bi) = 0$ as well. In this case we have $z-(a+bi)$ and $z-(a-bi)$ are factors, so

$(z-(a+bi))(z-(a-bi)) = z^2 + 2az + (a^2 + b^2)$

is also a factor, and can be divided out from $p(z)$.