

Least squares

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To solve a least squares problem, one minimizes

$$\sum_{i=0:N} |f(x_i) - P(x_i, \theta)|^2$$

in terms of the unknown parameters θ of a polynomial P , for all values of x .

$r = f(x_i) - P(x_i, \theta)$, represents the residual.

When r is complex, this means that the magnitude of the residue is squared, but i don't understand why this must be squared, since the magnitude is always positive. When dropping the square, I think one is solving a different problem. Can someone point this out for me?

Thanks

John