

Re: Can someone explain this proof, please?

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- *From:* Timothy Murphy <tim@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Fri, 18 Aug 2006 13:20:29 +0100
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victor_meldrew_666@xxxxxxxxxxx wrote:

Timothy Murphy wrote:

I take it that your proof shows that if the solution is written
 $f(x)g(x) = C(x)$,
then we get the same solution on replacing x by $1/x$
ie $(x^n f(1/x))(x^m g(1/x)) = x^{m+n} C(1/x) = C(x)$.

An easy way to see that f and g are reciprocal polynomials
is to note that each zero z of f is a root of unity
and so has modulus 1. As f has real coefficients the
conjugate of z which is z^{-1} is also a root. Hence
 f is reciprocal.

So the second part of your Hypothesis $H(j)$ –
that $a_i = a_{n-i}$ and $b_i = b_{m-i}$
could have been proved first, as a lemma.
The inductive hypothesis would then simply have been
that a_i, b_i are 0 or 1, which is a very natural hypothesis.

I'm coming round to the view that the problem might have been
easier than I thought, though hardly "trivial".

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