Re: Algebraic integers

Source: http://sci.tech−archive.net/Archive/sci.math/2004−12/7208.html

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From: Dik T. Winter (*Dik.Winter_at_cwi.nl*)
Date: 12/12/04

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Date: Sun, 12 Dec 2004 02:37:28 GMT
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In article <cpg105$2mu2$1@agate.berkeley.edu> magidin@math.berkeley.edu (Arturo Magidin) writes:
> In article <I8JAtw.MzB@cwi.nl>, Dik T. Winter <Dik.Winter@cwi.nl> wrote:
>
> >I honestly think that the best way to put exercises to the students is
> >to consider other quadratic fields, with a norm function and defining
> >integers to be those that have integer norm.
>
> What norm? Certainly not the usual norm.

The usual norm, for quadratic fields.

*> For example, in Q(sqrt(−15)), the norm of (1/4) + (1/4)*sqrt(−15) is*
> 1, an integer, yet it is clearly not an algebraic integer.

Yes, in some cases such a norm (as Hardy & Wright call it) will not result in algebraic integers. However, at the level the students apparently are, they would have difficulty proving that it is *not* an algebraic integer. They have just touched the Gaussian integers. Nevertheless, while they are not algebraic integers, they are integer−like, and that was the purpose; to show that there were interesting other integer−like rings.

But I was indeed wrong when I said that they could prove that the "integers" so defined were algebraic integers. I shouls really pick up again Hardy & Wright to see how they do it.

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