

## Problem of the Week-1: Forty from Four

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It is possible to obtain every integer between 0 and 15 by adding one or more of the numbers in the set  $\{1, 2, 4, 8\}$  with the condition that no number is used more than once in a given sum. Note that by convention the empty sum is equal to 0.

Find four integers so that every integer between -40 and 40 can be obtained by adding or subtracting (i.e. using the additive inverse in a sum) some or all of them.

As always, show your work, fully explain and justify your answer.

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Posting Date 8/30/14. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 (e-mail or hard-copy, but hard copy submissions must include a time stamp) by 4 pm on 9/12/14.