

## STEP III, 2011 Q2 EC

2. This was quite a popular question, being attempted by 70% of candidates. Scores were polarized, though overall the mean score was below half marks, much the same as half of the questions on the paper. Most candidates successfully dealt with the stem. Attempts at part (i) were in equal proportions, applying the stem or a variant of the standard proof of the irrationality of the square root of 2, though some of the latter overlooked the fact that it was the  $n$ th root being discussed. Parts (ii) and (iii) saw three methods employed. One method was to consider the location of the real roots then apply the stem, the second being to re-arrange the expression to equal the integer and consider factors (again applying the stem). In both these cases, failure to consider all cases lost marks, and there were frequent lacks of rigour. However, considering  $x$  being odd or even, when used, was particularly slick and successful.



# NextStepMaths.com

To view mark schemes, fully worked solutions and examiner's comments, and for more details about tutoring and other services offered, go to [NextStepMaths.com](https://www.NextStepMaths.com)