

STEP II, 2020, Q1 EC

This was the most popular question on the paper, and also the one on which candidates performed the best.

In general, candidates were confident in applying the substitution given in part (i) and completed the integration correctly, although there were a number of solutions in which careless errors were seen.

Successful completion of the remaining two parts required candidates to understand the reason why the substitution suggested in part (i) was helpful, and so candidates who continued to apply the same substitution from part (i) to later parts were often unable to make useful progress, particularly on part (iii).

In part (ii) many candidates took the approach of making a sequence of two substitutions to reach the answer. Attempts involving just one substitution were more likely to include errors, although a number of these were also completed successfully. In some cases candidates recognised that the integral was going to be reduced to a form similar to that in part (i), but then did not obtain exactly the correct function to be integrated.

In part (iii) candidates who were continuing with the same substitution as in part (i) often spent a lot of time rearranging the function to be integrated without success. Some attempts to apply partial fractions were seen in this section despite the fact that the factors were square roots of linear expressions. Many of those who were able to adapt the substitution from part (i) did recognise the form of the new function to be integrated and often selected an appropriate substitution.



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