

## **STEP II, 2019, Q1 EC**

This was the question answered by the largest proportion of candidates and many good solutions were seen. However, many candidates did not appreciate the importance of the phrase *if and only if* in parts of this question. As a result a large number of attempts failed to achieve full marks as it was not made clear that the reasoning presented also worked in the opposite direction.

Having shown the first result, many candidates were able to identify the appropriate choice of  $g(x)$  when attempting part (i) and successfully showed that  $2a = q + r$ . Many were also able to find a correct expression for the gradient, although some did not find this expression in terms of the variables requested.

In part (ii) a pleasing number of candidates were able to recognise that the results from part (i) would be relevant here as well. Again, some of the solutions to this part failed to recognise that the question required the result to be shown in both directions.



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