



## STEP II, 2006, Q4 EC

- 4 Another difficult start again put most candidates off this question at the outset (if not before) and there were relatively few efforts at it. Most of these were pretty decent and scored well. The use of the initial result in (i) was straightforward, provided one is prepared to spot a decent substitution (such as  $c = \cos x$ ). The formula books then helped bypass the integration required. In (ii), the given integral splits into the answer to (i) + a second integral, which must be considered separately. A simple linear substitution helped here, although quite a few candidates incorrectly assumed a result over the interval  $(\pi, 2\pi)$  similar to the given one could just be assumed to hold. This was often the case in (iii) also, although fewer candidates tried such a move: the  $\sin(2x)$  forcing them to consider more sensible approaches, such as (again) a linear substitution (after using the double angle formula for sine).



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