

## STEP II, 2009, Q5 EC

**Q5** This was the most popular question on the paper, though only by a small margin, and the second highest scoring. In fact, I can be very specific and state that almost all of the really successful attempts scored 15 or 16 marks. The few marks lost were almost invariably in (ii), where so very, very few picked up the hints as to the only, minor difficulty within the question. Once again, this is almost certainly due to the mind-set of simply ploughing on regardless without stopping to think about what is actually going on. Whilst understanding that nearly all candidates will feel under considerable pressure to pick up as many marks as possible as quickly as possible, **NO-ONE** who sits this paper should be of the view that they are not going to be challenged to think. And, to be fair to the setting panel, we did put some fairly obvious signposts up for those who might take the trouble to look for such things. For future STEP candidates, this will make an excellent practice question for teachers to put their way. (If they are willing to learn from their mistakes, and you think you can catch them out ... this is a marvellous question to use.) One pointer is in the change of limits, from  $(5, 10)$  to  $(\frac{5}{4}, 10)$ ; the other is in the switch from asking for integrals-to-be-evaluated to asking for areas. The crux of the matter is that most A-level students believe that  $\sqrt{x^2} = x$  rather than  $|x|$ . Once you realise that, the question is fiddly but otherwise rather easy.



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