



## STEP III, 2005, Q3 EC

- 3 Almost all candidates attempted this question, and could complete the algebra correctly; most could also solve the quartic equation in the last part using one of the ideas from the earlier parts. Relatively few, however, understood what was meant by a necessary condition on  $a$ ,  $b$  and  $c$  and simply gave formulae for these in terms of  $p$ ,  $r$  and  $s$ , while virtually no-one, even among those who found that  $a^3 + 8c = 4ab$  was necessary, could establish the sufficiency of this condition.



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