

## STEP III, 2012 Q3 EC

3. Two thirds of candidates attempted this question, but generally, with only moderate success earning just less than half marks. The vast majority of candidates (more than 85%) did not observe that, regardless of the case, the two parabolas “touch exactly once”, dropping 4 or 5 marks immediately. However, most managed to obtain the three results in part (ii), though a few seemed to forget to derive that for  $k$ . Unaccountably, many threw away the final marks, only considering the case  $a = 1$ .



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