

STEP II, 2022, Q6 EC

Question 6

This was one of the better answered questions on the paper and most candidates produced substantial responses to the question. Part (i)(a) was completed well in general, with most candidates achieving good marks for this section. When considering the second family of curves, some candidates forgot to include the $\frac{dy}{dx}$ on the right-hand side following their differentiation with respect to x . In part (i)(b) many candidates failed to justify their division by $(x^2 - y^2)$ when considering the case where $x \neq y$. Most candidates were however able to show that the tangents do remain perpendicular even in the case where $x = y$.

In part (ii) many candidates failed to recognise that c needed to be eliminated from the differential equation in order to find the second family of curves. This mistake often led to the candidate only being able to achieve one of the marks available in this section.

Many candidates were able to make good progress on part (iii) of the question and many good solutions to this part of the question were seen.



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