

STEP II, 2016, Q1

- 1 The curve C_1 has parametric equations $x = t^2$, $y = t^3$, where $-\infty < t < \infty$. Let O denote the point $(0, 0)$. The points P and Q on C_1 are such that $\angle POQ$ is a right angle. Show that the tangents to C_1 at P and Q intersect on the curve C_2 with equation $4y^2 = 3x - 1$.
Determine whether C_1 and C_2 meet, and sketch the two curves on the same axes.



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