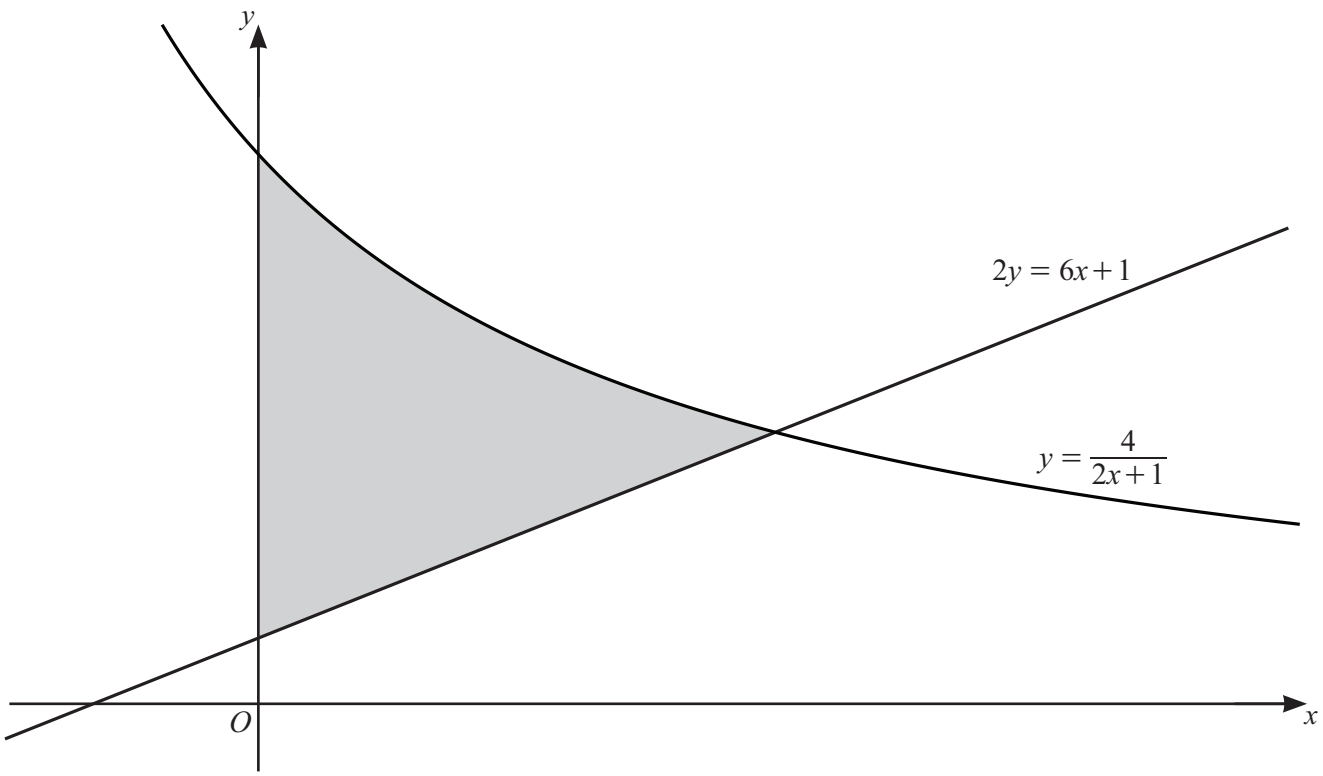
8 The tangent to the curve $y = e^x(2x+5)^{\frac{1}{2}}$ at the point where $x = 2$ meets the x-axis at the point X and the y-axis at the point Y. Find the coordinates of the mid-point of XY, giving your answer in exact form. [8]

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The diagram shows part of the curve $y = \frac{4}{2x+1}$ and the straight line $2y = 6x + 1$. Find the area of the shaded region, giving your answer in the form $\ln a + b$, where a is an integer and b is a rational number. [8]

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