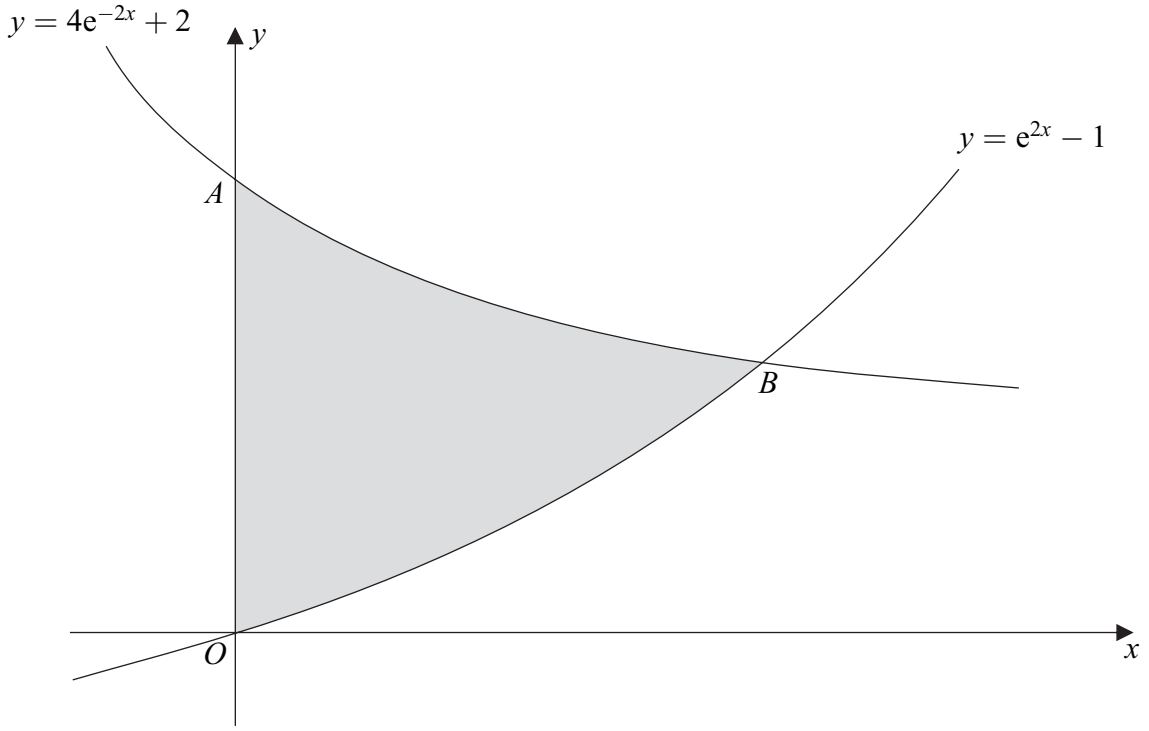
The diagram shows the curves $y = e^{2x} - 1$ and $y = 4e^{-2x} + 2$.



The curve $y = 4e^{-2x} + 2$ crosses the y-axis at the point A and the curves intersect at the point B.

(a) Describe a sequence of two geometrical transformations that maps the graph of $y = e^{x}$ onto the graph of $y = e^{2x} - 1$. *(4 marks)*

(b) Write down the coordinates of the point A. *(1 mark)*

(c) (i) Show that the x-coordinate of the point B satisfies the equation

$$(e^{2x})^2 - 3e^{2x} - 4 = 0$$ *(2 marks)*

(ii) Hence find the exact value of the x-coordinate of the point B. *(3 marks)*

(d) Find the exact value of the area of the shaded region bounded by the curves $y = e^{2x} - 1$ and $y = 4e^{-2x} + 2$ and the y-axis. *(5 marks)*