

10 The graph of $y = e^x$ can be transformed to the graph of $y = e^{2x-1}$ by a stretch parallel to the x -axis **followed by** a translation.

(a) (i) State the scale factor of the stretch. [1]

(ii) Give full details of the translation. [2]

Alternatively the graph of $y = e^x$ can be transformed to the graph of $y = e^{2x-1}$ by a stretch parallel to the x -axis and a stretch parallel to the y -axis.

(b) State the scale factor of the stretch parallel to the y -axis. [1]

The point P lies on the curve $y = e^{2x-1}$ and has x -coordinate of $\frac{1}{2}$.

(c) Show that the tangent to the curve $y = e^{2x-1}$ at P has equation $y = 2x$. [4]

(d) Find the **exact** area enclosed by the curve $y = e^{2x-1}$, the tangent to the curve at P and the y -axis. [4]