

STEP/Transformations Q4 (28/6/23)

What combination of transformations converts $y = 3^{-x}$ to $y = 3^{2x-1}$?

Solution

$y = 3^{-x} \rightarrow y = 3^x$ is a reflection in the y -axis.

$y = 3^x \rightarrow y = 3^{x-1}$ is a translation of $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

$y = 3^{x-1} \rightarrow y = 3^{2x-1}$ is a stretch of scale factor $\frac{1}{2}$ in the x -direction