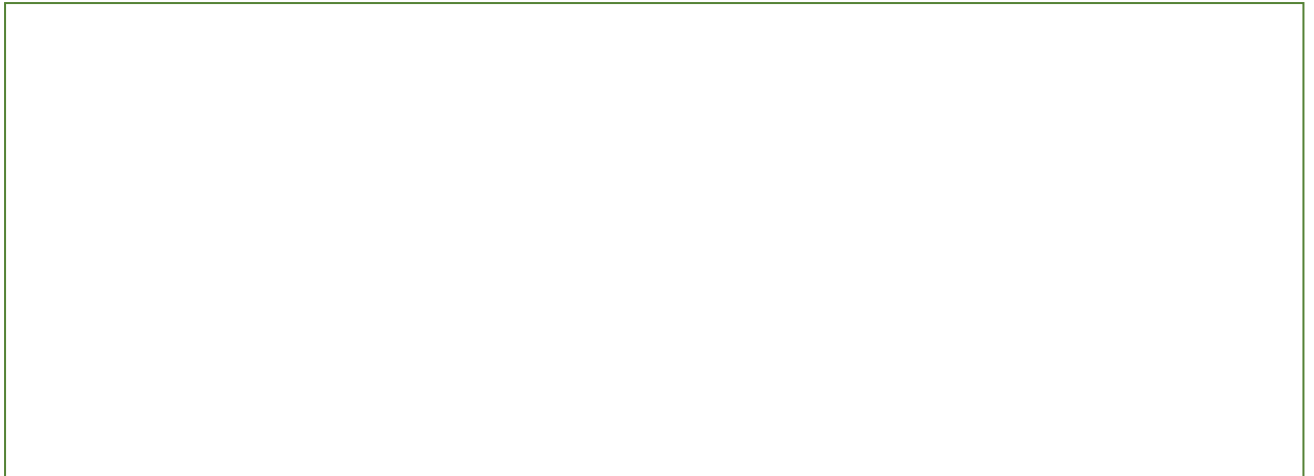


Combined Transformations



Examples

1. Represent as a single matrix the transformation representing a reflection in the line $y = x$ followed by a stretch on the x axis by a factor of 4.

2. Represent as a single matrix the transformation representing a rotation 90° anticlockwise about the point $(0,0)$ followed by a reflection in the line $y = x$.

Test Your Understanding

The transformation U , represented by the 2×2 matrix \mathbf{P} , is a rotation through 90° anticlockwise about the origin.

(a) Write down the matrix \mathbf{P} . (1)

The transformation V , represented by the 2×2 matrix \mathbf{Q} , is a reflection in the line $y = -x$.

(b) Write down the matrix \mathbf{Q} . (1)

Given that U followed by V is transformation T , which is represented by the matrix \mathbf{R} ,

(c) express \mathbf{R} in terms of \mathbf{P} and \mathbf{Q} , (1)

(d) find the matrix \mathbf{R} , (2)

(e) give a full geometrical description of T as a single transformation. (2)