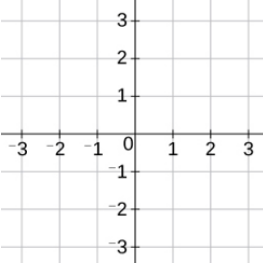
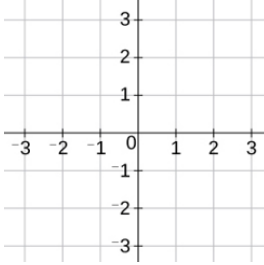
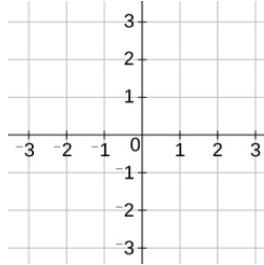


Reflections Using Matrices

<p>(a)</p> <p>By considering the unit square, determine the matrix which describes a reflection in the x-axis.</p> 	<p>(b)</p> <p>Describe fully the single transformation represented by the matrix $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$</p> 	<p>(c)</p> <p>By considering the unit square, determine the matrix which describes a reflection in the line $y = -x$.</p> 
<p>(d)</p> <p>The point $(-4, 2)$ is mapped onto the point (a, b) when reflected in the x-axis. Using matrix algebra, find the coordinates (a, b).</p>	<p>(e)</p> <p>The point (c, d) is mapped onto the point $(7, -5)$ when reflected in the line $y = -x$. Using matrix algebra, find the coordinates (c, d).</p>	<p>(f)</p> <p>A triangle with vertices at $(0, 5)$, $(4, 3)$ and $(1, -1)$ is reflected in the line $y = x$. Use matrix algebra to find the coordinates of the vertices of the reflected triangle.</p>
<p>(g)</p> <p>A triangle with vertices at $(0, 1)$, $(1, 0)$ and $(3, 2)$ is reflected so its vertices map to $(0, -1)$, $(-1, 0)$ and $(-2, -3)$. Find the transformation matrix and the line of reflection.</p>	<p>(h)</p> <p>The point $(-2, a)$ is mapped onto the point $(b, 3)$ following a reflection in the line $x = 0$. Use matrix algebra to find the values of a and b.</p>	<p>(i)</p> <p>The point $(x, 3x - 7)$ is mapped onto the point $(y + 3, y)$ following a reflection in the line y-axis. Use matrix algebra to find the values of x and y.</p>