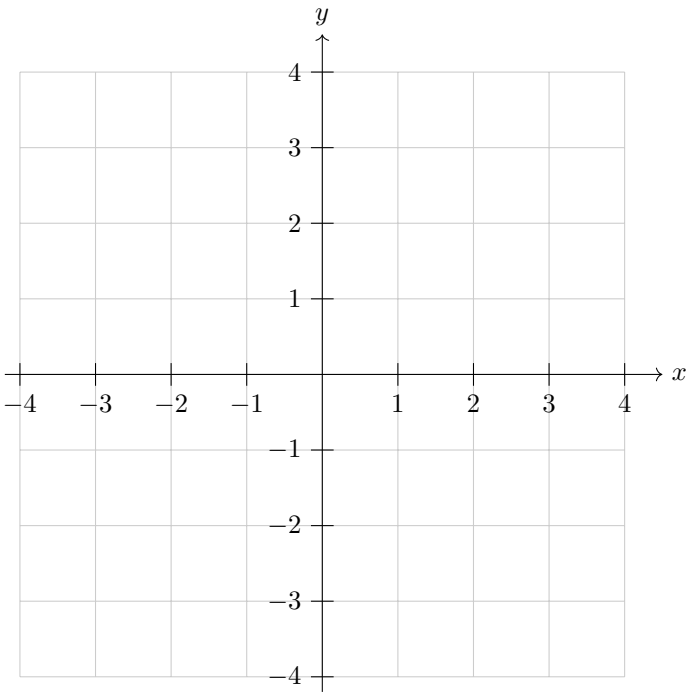
1. [4 *points*]

The line $y = -\frac{1}{2}x + 1$ is reflected in the line $y = x$. Sketch both lines and write down the equation of the new line in the gradient-intercept form.

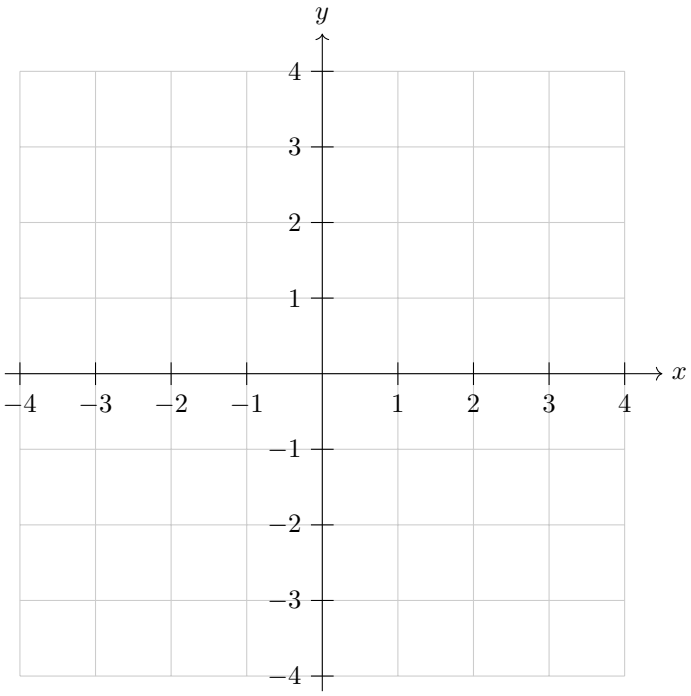


2. [2 *points*]

Find the unit vector in the opposite direction to vector $\vec{v} = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$

3. [6 *points*]

The curve $y = \sqrt{x}$ is translated by the vector $\vec{v} = \begin{pmatrix} -2 \\ -1 \end{pmatrix}$ and then reflected in the line $y = 1$. Sketch the curve and its image after reflection. Find the equation of the new curve.



3. [6 *points*]

The curve $y = \sqrt{x}$ is translated by the vector $\vec{v} = \begin{pmatrix} -2 \\ 1 \end{pmatrix}$ and then reflected in the line $y = x$. Sketch the curve and its image after reflection. Find the equation of the new curve.