MX SP 1 What is the angle between the vectors $\begin{pmatrix}7\\1\end{pmatrix}$ and $\begin{pmatrix}-1\\1\end{pmatrix}$? **1**

A. $\cos^{-1}(0.6)$ B. $\cos^{-1}(0.06)$ C. $\cos^{-1}(-0.06)$ D. $\cos^{-1}(-0.6)$

D

Let $\underset{\sim}{u} = \begin{pmatrix}7\\1\end{pmatrix}$ and $\underset{\sim}{v} = \begin{pmatrix}-1\\1\end{pmatrix}$:

$$\cos\theta = \frac{\underset{\sim}{u}\bullet\underset{\sim}{v}}{\left|\underset{\sim}{u}\right|\left|\underset{\sim}{v}\right|}$$

$$= \frac{7\times(-1)+1\times 1}{\sqrt{7^2+1^2}.\sqrt{1^2+1^2}}$$

$$= \frac{-6}{\sqrt{50}.\sqrt{2}}$$

$$= -0.6$$

$$\therefore \theta = \cos^{-1}(-0.6)$$