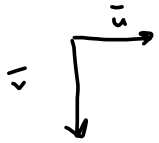
12. [-/1 Points] DETAILS LARTRIG10 3.4.029. [3883139]

Find the angle θ (in radians) between the vectors. (Round your answer to two decimal places.)

$\mathbf{u} = \langle 2, 0 \rangle$

$\mathbf{v} = \langle 0, -4 \rangle$

$\cos\theta = \frac{\bar{u}\cdot\bar{v}}{\|\bar{u}\|\|\bar{v}\|} = \frac{0+0}{\quad} = 0$



Find $\mathbf{u} \cdot \mathbf{v}$, where θ is the angle between $\mathbf{u}$ and $\mathbf{v}$.

$\|\mathbf{u}\| = 16,\ \|\mathbf{v}\| = 144,\ \theta = \frac{3\pi}{4}$

$\cos\theta = \frac{\bar{u}\cdot\bar{v}}{\|\bar{u}\|\|\bar{v}\|}$

$\cos\frac{3\pi}{4} = \frac{\bar{u}\cdot\bar{v}}{(16)(144)}$

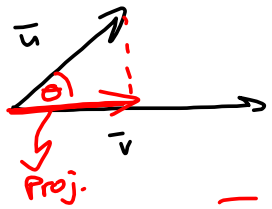
Find the projection of **u** onto **v**.

$\mathbf{u} = \langle 4, 4 \rangle$

$\mathbf{v} = \langle 6, 1 \rangle$

$\text{proj}_{\bar{v}}\bar{u}$

$\frac{\bar{u}\cdot\bar{v}}{\|\bar{v}\|^2}\bar{v}$



$(\|\bar{u}\|\cos\theta)\frac{\bar{v}}{\|\bar{v}\|}$

$= \|\bar{u}\| \cdot \frac{\bar{u}\cdot\bar{v}}{\|\bar{u}\|\|\bar{v}\|} \cdot \frac{\bar{v}}{\|\bar{v}\|}$

$= \frac{\bar{u}\cdot\bar{v}}{\|\bar{v}\|^2}\bar{v}$