WRITE YOUR NAME:

MAC 2313 Quiz 2
Thursday January 18th

Find the angle between the vectors $\mathbf{u} = \langle 2, 1, 1 \rangle$ and $\mathbf{v} = \langle 1, 0, 1 \rangle$.

We know $\vec{u} \cdot \vec{v} = |\vec{u}||\vec{v}| \cos\theta$
where θ is the angle between $\vec{u}$ and $\vec{v}$.

Hence $\cos\theta = \dfrac{\vec{u} \cdot \vec{v}}{|\vec{u}||\vec{v}|} = \dfrac{2 \cdot 1 + 1 \cdot 0 + 1 \cdot 1}{\sqrt{2^2+1^2+1^2} \cdot \sqrt{1^2+0^2+1^2}}$

$= \dfrac{3}{\sqrt{6}\sqrt{2}} = \dfrac{3}{\sqrt{12}} = \dfrac{3}{\sqrt{4} \cdot \sqrt{3}} = \dfrac{\sqrt{3}}{2}$

So $\theta = \arccos \dfrac{\sqrt{3}}{2} = \dfrac{\pi}{6}$ or 30°