

Name:

1. Consider the vector $\mathbf{v} = \langle 1, 2, 1 \rangle$. Find its length and find a unit vector pointing in the same direction as \mathbf{v}

2. Find the angle between the vectors $\mathbf{v} = \langle 1, 2, 1 \rangle$ and $\mathbf{w} = \langle 0, 0, -1 \rangle$. Your answer will use an inverse trig function. That's ok!

3. A steel bar sitting on the ground is pulled by a cable pointing in the (by now familiar) direction $\mathbf{v} = \langle 1, 2, 1 \rangle$ and subjected to a tension force in the cable of 500N. Find the tension force vector \mathbf{F}_c in the cable.

4. This same steel bar has a mass of 102kg and therefore is subject to a gravitational force $\mathbf{F}_g = \langle 0, 0, -1000\text{N} \rangle$. Find the total force (gravitational and tension) acting on the bar.