

Name:**ID:**

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1. Consider the vector $\mathbf{v} = \langle -2, 4, 1 \rangle$. Find its length.

2. For the same vector \mathbf{v} , find a vector \mathbf{u} pointing in the same direction but that has length 10.

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3. Find the angle between the vectors $\mathbf{v} = \langle -2, 4, 1 \rangle$ and $\mathbf{w} = \langle 1, 1, 0 \rangle$. Your answer will use an inverse trig function. That's ok! It might help to notice that the vector \mathbf{v} is the same as in the previous two problems.
4. A large lamp is suspended from the ceiling from two cables and is therefore subjected to three forces: gravitational force \mathbf{F}_g and two tension forces \mathbf{F}_1 and \mathbf{F}_2 in the cables. The lamp has a mass of 102kg and therefore $\mathbf{F}_g = \langle 0, 0, -1000 \rangle$ N. One of the cables provides a tension force $F_1 = \langle 0, -400, 700 \rangle$ N. The lamp is in static equilibrium. What is the value of \mathbf{F}_2 ?