Solutions for Quiz 1, Section A02

Find the unit vector pointing in the opposite direction from $\vec{v} = \langle 1, 2, 3 \rangle$.

Solution: The vector $-\vec{v} = \langle -1, -2, -3 \rangle$ points in the opposite direction from $\vec{v}$. The length of this vector is:

$$\begin{aligned} \sqrt{(-1)^2 + (-2)^2 + (-3)^2} &= \sqrt{1 + 4 + 9} \\ &= \sqrt{14} \end{aligned}$$

So $\frac{1}{\sqrt{14}}\langle -1, -2, -3 \rangle$ is a unit vector pointing in the opposite direction from $\vec{v}$.