Problem 1

Find the vector with initial point $P(1, 2, 3)$ and terminal point $Q(2, 4, 1)$, then compute it's length and direction.

Problem 2

Find the direction and magnitude of the vector $3i - 2j + 1k$.

Problem 3

For a general vector $\vec{v}$ in $\mathbb{R}^3$, show that $\dfrac{\vec{v}}{|\vec{v}|}$ is always a unit vector.