Worksheet 1

Problem 1

Find the unit vector that makes an angle of $2\pi/3$ with the positive x-axis.

Problem 2

Find the unit vector in the direction of $v = 1i + 2j + 4k$. Find the magnitude of v, and express v as a product of its magnitude (length) and direction.

Problem 3

Find the angle between the vectors $u = 2i + j$ and $v = i + 2j - k$.

Problem 4

Show that $u \cdot u = |u|^2$.

Problem 5

Find the projection of $u = 1i + 2j$ onto the vector $v = 2i - 1j$.