# Problem 1

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

# Problem 2

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

# Problem 3

Find a vector that is perpendicular to the vectors $u = i + 2j$ and $v = i + k$.

# Problem 4

Find a vector that is perpendicular to the vectors $u = i + 2j$ and $v = i + k$ with length 1.

# Problem 5

Find the area of the parallelogram determined by $u = i + 2j$ and $v = i + k$.