Math 53 DIS 108/109
Quiz: February 4, 2015   Name: _____

Show your work fully for all questions. Quiz has **front** and **back** sides.

Problem 1:   Find $\mathbf{a} \cdot \mathbf{b}$. $\mathbf{a} = (4, -2, 3)$, $\mathbf{b} = 2\mathbf{i} + 5\mathbf{k}$.

Problem 2:   Find the lengths of the sides of the triangle with points PQR. Is it a right triangle? Is it isosceles? $P = (2, -1, 0)$, $Q = (4, 1, 1)$, $R = (4, -5, 4)$

Problem 3: Find a (non-zero) vector perpendicular to both **a** and **b**. **a** = $(\mathbf{1}, -\mathbf{3}, \mathbf{1})$, **b** = $(\mathbf{2}, \mathbf{1}, \mathbf{0})$.

Problem 4: Find the equation for the plane through the point $(1, 2, 5)$ with normal vector $2\mathbf{i} - \mathbf{j} + \mathbf{k}$.