**MATH 2220 HW1 AND HW2.**

**Homework 1. Due Wednesday 3 September.**

(1) Section 1.3, p. 61–65
   (a) # 8.
   (b) # 24.
   (c) # 36.

(2) Find a unit vector parallel to the line of intersection of the planes $x - 2y + 5z = 2$ and $3x - y + 5z = 3$.

(3) Given the points $P = (1, 2, 3)$, $Q = (3, 5, 2)$ and $R = (2, 2, 3)$ find:
   (a) The area of the triangle $PQR$.
   (b) The distance from $R$ to the line through $P$ and $Q$.

**Homework 2. Due Wednesday 10 September.**

(1) Section 2.1 p. 105–107
   (a) # 2a.
   (b) # 17.
   (c) # 30.

(2) Section 2.2, p. 125–127.
   (a) # 8a.
   (b) # 16b.

(3) For each of the following sets $S$, state whether $S$ is open, closed or neither. Draw a sketch of $S$. What is the boundary of $S$? (You should justify your answers, but detailed proofs are not required.)
   (a) $S =$ the set of points $(x, y)$ in $\mathbb{R}^2$ which satisfy $x \geq 0$ and $y < 0$.
   (b) $S =$ the line $2x + 3y = 5$.
   (c) $S = \{(x, y) \in \mathbb{R}^2 : x^2 + y^2 < 1\}$. *Recall that this means: "$S$ is the set of points $(x, y)$ in $\mathbb{R}^2$ which satisfy $x^2 + y^2 < 1$."*