Name: MATH 241 §004

Quiz 2: §12.4, 12.5

Complete the following problems to the best of your ability. **SHOW ALL OF YOUR WORK.** Unshown work will not be graded. You may not use a calculator.

1. Let $P = (0, 1, -1)$, $Q = (4, 2, -1)$, and $R = (3, 2, 1)$ be points in 3-space.

   (a) Calculate the area of the triangle $\triangle PQR$.

   (b) Find an equation for the plane through P, Q and R.

   (c) Give a parameterisation of the line between P and Q.

   (d) Find the intersection between the line $\overleftrightarrow{PQ}$ and the line given by the parameterisation $x = 1 - 2t$, $y = 1 + t$, and $z = 2 - t$, if it exists. If the lines don't intersect, explain why.