

MT1612: EXAMPLE SHEET¹ VIII (for May 12, 1999)

- 1.) Let A, B, C and Q be the points with the position vectors $\mathbf{a} = (1, 2, 3)$, $\mathbf{b} = (3, 2, 1)$, $\mathbf{c} = (1, 1, 2)$ and $\mathbf{q} = (8, 7, 6)$, respectively. Find
- (i) the vector equation of the plane \mathbf{p} through A, B and C.
 - (ii) the area of the triangle (!) with corners at A, B and C.
 - (iii) a unit normal \mathbf{n} to the plane \mathbf{p} .
 - (iv) the vector equation of the intersection of the plane \mathbf{p} with the plane $z = 0$.
 - (v) the angle between the plane \mathbf{p} and the plane $z = 0$.
 - (vi) the distance between point Q and the plane \mathbf{p} .
 - (vii) the distance of the plane \mathbf{p} from the origin.
 - (viii) Check if the plane \mathbf{p} has an intersection with the plane

$$\mathbf{p}_2 = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} + \mu_1 \begin{pmatrix} 2 \\ -1 \\ -3 \end{pmatrix} + \mu_2 \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix}.$$

This is the last example sheet. You do not have to hand in the solutions but you can (of course) contact me if you have any further questions about any of the questions.

As far as I know (please check this!), the exam will be on June 10, 1999 in the morning. Good luck!

¹Any feedback to: *M.Heil@maths.man.ac.uk*