MA10110 Assignment 0: Coordinate Geometry: completing-the-square and determinants

Please complete by the end of the first week of teaching.

Not for credit. Not for handing-in.

If you are not sure how to do these questions then: (i) find a book; (ii) use the help desk; and/or (iii) look for a tutorial video on youtube.

1. Re-write the following quadratics as a complete square plus a constant, i.e. in the form $a(x+b)^2+c$:

   (a) x^2+6x+5

   (b) x^2+5x+6

   (c) $2x^2+6x+7$

   (d) $3x^2+9x+1$

   (e) $4x^2+9x+1$

2. Calculate the determinant of the following matrices:

   (a) $\begin{vmatrix} 1 & 2 \\ 3 & 1 \end{vmatrix}$

   (b) $\begin{vmatrix} 5 & 2 \\ 8 & 4 \end{vmatrix}$

   (c) $\begin{vmatrix} 1 & 2 \\ 3 & 6 \end{vmatrix}$

   (d) $\begin{vmatrix} 1 & 0 & 2 \\ 4 & 1 & 1 \\ 2 & 3 & 0 \end{vmatrix}$

   (e) $\begin{vmatrix} 1 & 2 & 1 \\ 3 & 1 & -1 \\ 1 & 3 & 4 \end{vmatrix}$

   (f) $\begin{vmatrix} -5 & 1 & 0 \\ 0 & 9 & 3 \\ 5 & 0 & 8 \end{vmatrix}$

   (g) $\begin{vmatrix} 1 & 2 & 3 \\ 3 & 6 & 9 \\ -4 & 1 & -2 \end{vmatrix}$

   (h) $\begin{vmatrix} 453.167 & 29.123 & 0 \\ 3\pi & \mathrm{e}^{92} & 0 \\ 4.156 & \sqrt{783} & 0 \end{vmatrix}$

   (i) $\begin{vmatrix} 1 & 0 & 0 \\ \mathrm{e}^{19} & 1 & 0 \\ \pi & 5 & 1 \end{vmatrix}$

   (j) $\begin{vmatrix} 19.6 & 27.3 & 12.1 \\ 1 & 5 & -4 \\ 1 & 5 & -4 \end{vmatrix}$

   (k) $\begin{vmatrix} x & y & z \\ 1 & 2 & 1 \\ 3 & 0 & 1 \end{vmatrix}$

For office use only: 1,3,-4, 1,5/2,-1/4, 2,3/2,5/2, 3,3/2,-23/4, 4,9/8,-65/16, -5,4,0, 17,-11,-345,0,0,1,0,p