

Math1204 Test 1 2013

January 23rd, 2013

Answer all questions and give complete reasons and checks for your answers. Please do not erase anything, just put a line through your work and continue; you cannot lose marks for anything you write. The parts of the questions are weighted as shown and can be answered in any order.

1. (a) Find all solutions to this system of equations by using row operations. [8]

$$\begin{aligned}4w - x + y - 14z &= 10 \\2w + 3x + y - 6z &= 4 \\3w + 11x + 2y - 7z &= 2\end{aligned}$$

- (b) Test whether your homogeneous and particular solutions satisfy the appropriate checks. [2]

2. (a) Find the inverse of this matrix (it only contains integers) using carefully chosen row operations: [8]

$$B := \begin{pmatrix} 5 & 2 & 4 \\ 9 & 3 & 4 \\ 3 & 2 & 7 \end{pmatrix}$$

- (b) Create two 2×2 matrices E and F with rank 1 such that when you multiply them to form EF , it doesn't have rank 1. explaining why you know the ranks are what they are supposed to be. [2]