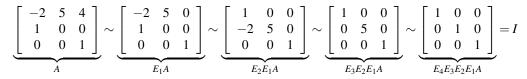
Books, watches, notes or cell phones are not allowed. The only calculators allowed are the Sharp EL-531\*\*. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

**Question 1.** (5 marks) Consider the following Gauss-Jordan reduction:



Find  $E_1, E_2, E_3, E_4$  and express A as a product of elementary matrices.

**Question 2.** Determine whether the following statements are true or false for any  $n \times n$  matrices A and B. If the statement is false provide a counterexample. If the statement is true provide a proof of the statement.

1. (3 marks) If A is an invertible matrix and B is row equivalent to A, then B is also invertible.

2. (3 marks) An expression of an invertible matrix A as a product of elementary matrices is unique.

<sup>&</sup>lt;sup>1</sup>from WeBWorK