

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. Given A and B are 3×3 matrices, $\det(A) = 4$ and $\det(B) = -3$. Find

a. (4 marks) $\det(-A^T(2B)^{-3})$

b. (4 marks) $\det(5BA^{-1} - 2B\text{adj}(A))$

Question 2. Given the linear system
$$\begin{cases} -2x_1 + 3x_2 + 2x_3 = 1 \\ x_1 - x_2 + 4x_3 = 2 \\ -3x_1 + 2x_2 + x_3 = 5 \end{cases}$$

a. (3 marks) Find the first column of the adjoint of the coefficient matrix of the above system.

b. (4 marks) Find x_2 of the above system only by using Cramer's Rule.