

# Answer to GREEN Exam

1. **A**

2. **A**

3. **C**

4. **E**

5. **C**

6. **B**

7. **D**

8. (1)  $\begin{bmatrix} 1 & 1 & a & 1 \\ 0 & 1 & a^2 - 2 & a \\ 0 & 0 & a^2 - 3a & a \end{bmatrix}$  (Answer may vary)

(2)  $a = 0$

(3)  $a = 3$

(4)  $a$  is not 0 or 3.

9. (1) The REDUCED row echelon form for the matrix  $A$  is  $\begin{bmatrix} 1 & 0 & 0 & -2 & 4 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

(2) A basis for the null space of  $A$  is  $\left\{ \begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} -4 \\ 0 \\ -1 \\ 0 \\ 1 \end{bmatrix} \right\}$ . Answer may vary!

10. (1) The determinant is 12.

(2)  $b_{32} = \frac{1}{3}$ .