

# Answer to GREEN Exam

1. **C**

2. **E**

3. **D**

4. **B**

5. **D**

6. **A**

7. **E**

8. (1)  $A = \begin{bmatrix} 5 & -2 \\ 4 & -2 \\ 0 & 1 \end{bmatrix}$       (2)  $T(\mathbf{u}) = \begin{bmatrix} -1 \\ -2 \\ 3 \end{bmatrix}$       (3) Yes,  $\mathbf{x} = \begin{bmatrix} 2 \\ 5 \end{bmatrix}$

9. (1)  $\begin{bmatrix} 1 & 2 & 3 & 2 \\ 0 & 1 & a & -4 \\ 0 & 0 & a^2 - a - 6 & a - 3 \end{bmatrix}$  (Answer may vary)

(2)  $a = 3$

(3)  $a = -2$

(4)  $a$  is not 3 or  $-2$ .

10. (1) The REDUCED row echelon form for the matrix  $A$  is  $\begin{bmatrix} 1 & 0 & 0 & 1 & 2 \\ 0 & 1 & 0 & -1 & 0 \\ 0 & 0 & 1 & -2 & 3 \end{bmatrix}$

(2) A basis for the null space of  $A$  is  $\left\{ \begin{bmatrix} -1 \\ 1 \\ 2 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} -2 \\ 0 \\ -3 \\ 0 \\ 1 \end{bmatrix} \right\}$ . Answer may vary!