Answer to GREEN Exam

1. **E**

2. **C**

3. **E**

4. **A**

5. **B**

6. **D**

7. **C**

8. (1) All constant multiples of t^2-1, or Span$\{t^2-1\}$. Answer may vary!

(2) $\{t^2-1\}$. (Here t^2-1 may be replaced by any of its nonzero constant multiples.)

(3) $\left\{\begin{bmatrix}1\\1\\0\end{bmatrix}, \begin{bmatrix}-1\\1\\0\end{bmatrix}\right\}$. Answer may vary!

9. (1) $\lambda_1=\lambda_2=2$, $\lambda_3=4$.

(2) For $\lambda_1=\lambda_2=2$: $\left\{\begin{bmatrix}1\\1\\0\end{bmatrix}, \begin{bmatrix}0\\0\\1\end{bmatrix}\right\}$. For $\lambda_3=4$: $\left\{\begin{bmatrix}1\\-1\\1\end{bmatrix}\right\}$. Answer may vary!

10. (1) $\lambda_1=-1$, $\lambda_2=4$.

(2) $c_1e^{-t}\begin{bmatrix}-3\\2\end{bmatrix}+c_2e^{4t}\begin{bmatrix}1\\1\end{bmatrix}=\begin{bmatrix}-3c_1e^{-t}+c_2e^{4t}\\2c_1e^{-t}+c_2e^{4t}\end{bmatrix}$, where c_1, c_2 are arbitrary constants.

(3) $e^{-1}+2e^4$.