Problem 2. Let $V = span(\{1, x, x^2\})$ and D is the derivative operator $D : V \to V$ such that $D[p](x) = p'(x)$. In the Chapter 3 exercises we showed that

$$D = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 2 \\ 0 & 0 & 0 \end{bmatrix}$$

Then $\det(D - \lambda I) = (-\lambda)^3 = 0$. Therefore the eigenvalues are $\lambda = 0$ with multiplicity 3.

Problem 4.

(i)

(ii)

Problem 6.

(i)

(ii)

Problem 8.

Problem 13.

Problem 15.

Problem 16.

Problem 18.

Problem 20.

Problem 24.

Problem 25.

Problem 27.

Problem 28.

Problem 31.

Problem 32.

Problem 33.

Problem 36.

Problem 38.