Assignment 14 – Part 1 – Math 411

(1) The matrices

$$A = \begin{pmatrix} 3 & 10 & -3 & 10 \\ 1 & 5 & -1 & 3 \\ 7 & -35 & 10 & -28 \\ 1 & -12 & 3 & -8 \end{pmatrix} \quad \text{and} \quad B = \begin{pmatrix} 3 & 3 & -1 & 3 \\ 1 & -2 & 1 & -4 \\ 7 & -35 & 10 & -28 \\ 1 & -5 & 1 & -1 \end{pmatrix}$$

have the same characteristic polynomial, namely $(x-2)^2(x-3)^2$. What are the dimensions of their eigenspaces? Are they diagonalizable? What are their minimal polynomials? What are the dimensions of their generalized eigenspaces? What are their Jordan canonical forms?