MAT247S - Algebra II
University of Toronto
Term Test — March 4, 2025
Time: 110 minutes

1. *[2+3+2+4=11 points]* Let

$$A = \begin{pmatrix} 2 & 0 & 0 & 0 \\ 1 & 2 & 0 & 1 \\ 0 & 1 & 3 & -1 \\ 0 & 0 & 0 & 3 \end{pmatrix}$$

   (a) Find the characteristic polynomial of A.

   (b) Determine the Jordan canonical form of A.

   (c) Find the minimal polynomial of A.

   (d) Find a matrix C such that $C^{-1}AC$ is in Jordan canonical form.