Name: Key ID #:

As always you need to show your work. Fill in the appropriate blanks

1. The char eqn of A is $\begin{pmatrix} 6 & 2 & 0 \\ 0 & 1 & 2 \\ 0 & -2 & 1 \end{pmatrix}$ is $(6-\lambda)\left[(1-\lambda)(1-\lambda)+4\right]=0$ with evals

$6,\ 1 \pm 2i$

$(1-\lambda)^2 = -4$

$\lambda - 1 = \pm 2i$

$\lambda = 1 \pm 2i$

2. The char eqn of A is $\begin{pmatrix} 6 & 2 \\ -3 & 1 \end{pmatrix}$ is $(6-\lambda)(1-\lambda)+6 = 0$ with evals

$3,\ 4$

$\lambda^2 - 6\lambda - 1\lambda + 6 + 6 = 0$

$\lambda^2 - 7\lambda + 12 = 0$

$\lambda = \frac{7 \pm \sqrt{49-48}}{2} = \frac{7 \pm 1}{2} = 3 \text{ or } 4$

3. Matrices A and B have the same eigenvalues if they are similar.

Matrices A and B are similar if $A = PBP^{-1}$ for some invertible P