December 21,2011

QUIZ♯2 Math202, sec 10, **Time allowed: 15 minutes**

Name: **ID ♯ :** **Serial:**

Exercise:

Let

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

$X_1 = \begin{pmatrix} 1 \\ -1-\sqrt{2} \end{pmatrix} e^{\sqrt{2}t}, X_2 = \begin{pmatrix} 1 \\ -1+\sqrt{2} \end{pmatrix} e^{-\sqrt{2}t}$ *and* $X_p = \begin{pmatrix} 1 \\ 0 \end{pmatrix} t^2 + \begin{pmatrix} -2 \\ 4 \end{pmatrix} t + \begin{pmatrix} 1 \\ 0 \end{pmatrix}$

Prove that the general solution of

$$X' = AX + \begin{pmatrix} 1 \\ 1 \end{pmatrix} t^2 + \begin{pmatrix} 4 \\ -6 \end{pmatrix} t + \begin{pmatrix} -1 \\ 5 \end{pmatrix}$$

is $X = c_1 X_1 + c_2 X_2 + X_p$.
solution.