Name

(8pts) 1. Complete the indicated operation giving the result in both "$a+bi$" and "$Re^{i\theta}$" forms. Watch your units! and enter answer in the appropriate box.

Operation	"$a+bi$"	"$Re^{i\theta}$"
(1+2i)+(2+2i)		
(1+3i)(3+4i)		
$e^{i(\pi/2)} - e^{i(3\pi/2)}$		
$\frac{5e^{i(\pi/2)}}{e^{i(\pi/4)}}$		

(12 pts) 2.Find the determinant and the inverse of the matrix below. Enter result in the space provided.

Determinant of $\begin{bmatrix} 1 & 2 & 3 & 0 \\ -1 & 2 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 3 \end{bmatrix} =$ ☐

Inverse of $\begin{bmatrix} 1 & 2 & 3 & 0 \\ -1 & 2 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 3 \end{bmatrix} =$

(10pts) 2. Find the solution of the following 1st order differential equation using LaPlace Transforms.

$$3\dot{x} + 12x = 1, \quad x(0) = 1$$