

Name: _____ ID #: _____ Section: 03

Q1 (2.5 Pts) Solve the system

$$\begin{aligned}\frac{dx}{dt} &= 2x \\ \frac{dy}{dt} &= -x + 2y\end{aligned}$$

Q2 (3.5 Pts) Solve the system $X' = \begin{pmatrix} 1 & 0 \\ 2 & -1 \end{pmatrix} X + \begin{pmatrix} e^t \ln t \\ -e^t \ln t + te^t \sin(t^2) \end{pmatrix}$

Q3 (4 Pts) Solve the system $X' = \begin{pmatrix} 1 & 0 & 0 \\ 2 & 1 & 1 \\ 0 & -1 & 1 \end{pmatrix} X$