COLOSTATE   FALL 2023   MATH 340   QUIZ (TUE. 10/10/2023)

NAME: _____   CSUID# _____   LAB TIME: _____

No calculator, textbook, homework, or any other references should be used. Please write down all necessary steps, partial credit will be given if deserved.

(10 points) *Problem 1.*

  (i) Find the general solution of the ODE $x'' - 2x' - 3x = 0$.

  (ii) Find a particular solution of the ODE $x'' - 2x' - 3x = e^{-t}$.

  (iii) Find the solution of the nonhomogeneous ODE satisfying the conditions $x(0) = 0$, $x'(0) = 1$.

(10 points) *Problem 2.* Consider an ODE $y'(t) = y\,(1 - y/100)$.

(i) Find A, B in the partial fraction decomposition $\dfrac{1}{y(100 - y)} = \dfrac{A}{y} + \dfrac{B}{100 - y}$.

(ii) Use the result in (i) to find the general solution of the ODE.

(iii) Find the particular solution satisfying the initial condition $y(0) = 10$.

Extra space (Please indicate which problem the work is for).