2022 Differential Equation Quiz 7 (Written quiz)

1 Find general solution of given equation!

$$4y'' - 4y' - 3y = 0$$

2 Find general solution of given equation! (Imaginary solution is not acceptable, solve the imaginary solution)

$$y'' - 2y' + 10y = 0$$

3 Find general solution of given equation!

$$2y'' + 3y' + y = t^2 + 3sin(t)$$

Hint: Solve the homogeneous equation then the non-homogeneous part. The non-homogeneous equation consists of polynomial and trigonometry. The solution will be in the form of $A + Bt + Ct^2 + Dcos(t) + Esin(t)$.

4 Find solution of given non-homogeneous equation with its initial value!

$$y'' + y' - 2y = 2t, \quad y(0) = 0, \quad y'(0) = 1$$

5 Find the solution of the homogeneous equation given initial value problem!

$$y'' + 3y' = 0, \quad y(0) = -2, \quad y'(0) = 3$$