

## 316-QUIZ 7-8

Name: \_\_\_\_\_

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(1) Determine the particular solution for the following ODE using the method of variation of parameters:

$$x^2 y'' - 4xy' + 6y = x^2 + 2$$

given the two homogeneous solutions  $y_1 = x^2$  and  $y_2 = x^3$ .

(2) Find the Laplace transform:

$$\mathcal{L}\{t^4 e^{5t} - e^t \cos \sqrt{7}t\}$$

(3) Find the Inverse Laplace transform:

$$\mathcal{L}^{-1} \left\{ \frac{7s^2 - 3s + 6}{(s - 2)(s^2 + 2s + 5)} \right\}$$

(4) Solve the IVP using Laplace transforms:

$$z'' - z = t - 3 ; z(0) = 3 , z'(0) = 0 .$$