

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics and Statistics**

**Math 202**      **Section#:** .....      **Serial #:** ....      **Quiz III(a) (Term 182)**

**Name :** ..... **ID #**..... **Marks** ...../7

1. If  $y_1 = x^2$  is a solution of  $x^2y'' + 2xy' - 6y = 0$ , then find its second solution by reduction of order formula.

2. Solve the boundary-value problem:

$$y'' - 10y' + 25y = 0, \quad y(0) = 1, \quad y(1) = 0.$$

3. Find linearly independent functions annihilated by differential operator  $D^2 - 6D + 10$ .

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**Math 202**      **Section#:** .....      **Serial #:** ....      **Quiz III(b) (Term 182)**

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1. If  $y_1 = x^2$  is a solution of  $x^2y'' - 3xy' + 4y = 0$ , then find the general solution of this DE on  $(0, \infty)$ .

2. Find the annihilator of the function  $g(x) = 8 - x^2 + x \sin 3x + 3e^{2x} \cos 4x + e^{2x} \sin 4x$ .

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**Math 202      Section#: .....      Serial #: ....      Quiz III(c) (Term 182)**

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1. If  $y_1 = x^{-1/2} \sin x$  is a solution of  $x^2 y'' + xy' + \left(x^2 - \frac{1}{4}\right) y = 0$ , then find the second solution of this DE by reduction of order formula.

2. Find general solution of  $y'' + 3y' = 3x - 8$ .