KFUPM **Semester 142**

Dept. Math. & Stat. **A.Y:2014/2015**

Test 4 **Tuesday (April 7, 2015)**

Name: …… **ID: ……**

Exercise 1:

Find a particular solution of

$$y'' + 3y' + 2y = \frac{1}{1 + e^x}.$$

Then find the general solution.

Solution:

Exercise 2:

Find a differential operator that annihilates the given function.

1. $e^{4x} + 4xe^{4x} + 3x - 9$
2. $6e^{2x}\cos 3x + 5e^{2x}\sin 3x$
3. $xe^{-x}\cos 5x$
4. $x^3 + 4x - 10$

Solution:

Exercise 3: Using annihilator method, solve the following DE :

$y^{(3)} - 3y^{(2)} + 3y' - y = x - 4e^{x}$

Solution:

Exercise 4: Solve the following DE :

$$2x^2y'' + 4xy' + 3y = 0$$

Solution: