

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS  
DEPARTMENT OF MATHEMATICS AND STATISTICS  
MATH 202-11  
Quiz # 3  
December 16, 2009

NAME:	ID#:
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**SHOW ALL YOUR WORK**

1. For the differential equation  $y'' + 4y' + 4y = 4 \cos 2x + 3 \sin 2x - 8$ , (i) **(2points)** find the solutions of the homogeneous equation and (ii) **(3points)** find an annihilator of lowest order for the right hand side.

2. **(5points)** Two roots of a cubic auxiliary equation with real coefficients are  $m_1 = \frac{1}{2}$  and  $m_2 = 1 + 3i$ . What is the corresponding linear homogeneous differential equation?