

MATH 227 (Differential Equations) Prof. Swift  
 Worksheet 33, Final Exam Review: Higher order ODEs.

1- Fill in the blanks.

Roots of char. equation	$r = 2, 5$		$r = \pm 2i$
char. eqn. in factored form		$(r+1)^2 = 0$	
LHODECC in operator form		$(D+1)^2 y = 0$	
General Solution	$y = c_1 e^{2t} + c_2 e^{5t}$		
Particular Solution		$y = 3te^{-t}$	$y = 5 \sin(2t)$

2. (Problem 7 from the sample Final Exam.)

Find the form of the particular solution, but do not evaluate the undetermined coefficients, of the ODE  $y''' + y' = t e^t \sin(t) + 3t^2 + t - 1$

• The "rule 1" original form of  $y_p$  is:

•  $y_h =$

• The "rule 2" final form of  $y_p$  is: