Math 274
10 July 2017

Quiz 6
Show Appropriate Work

Name: _____
Point Values in boxes.

Find the general solution for the following.

1. [2] $y'' + 5y' + 4y = 0$

$r^2 + 5r + 4 = 0$

$(r+4)(r+1) = 0$

$r = -1, -4$

$y = C_1 e^{-t} + C_2 e^{-4t}$

2. [2] $y'' + 4y' + 4y = 0$

$(r+2)^2 = 0$

$y = C_1 e^{-2t} + C_2 t e^{-2t}$

3. [2] $y'' + 3y' + 4y = 0$

$r^2 + 3r + 4 = 0$

$r = \frac{-3 \pm \sqrt{9-16}}{2} = \frac{-3 \pm i\sqrt{7}}{2}$

$y = C_1 e^{-3t/2} \cos\left(\frac{\sqrt{7}}{2}t\right) + C_2 e^{-3t/2} \sin\left(\frac{\sqrt{7}}{2}t\right)$

4. [2] $y'' = 0$

$r^2 = 0$

$r = 0$

$y = C_1 + C_2 t$

5. [2] $z''' + 2z'' - 4z' - 8z = 0$

$r^3 + 2r^2 - 4r - 8 = 0$

$r^2(r+2) - 4(r+2) = 0$

$(r-2)(r+2)^2 = 0$

$y = C_1 e^{2t} + C_2 e^{-2t} + C_3 t e^{-2t}$