

Quiz #4

$$\text{Solve: } y'' + y = 8e^{2t}$$

$$\lambda^2 + 1 = 0 \Rightarrow \lambda = \pm i$$

$$y_h = C_1 \cos(t) + C_2 \sin(t)$$

$f(t) = 8e^{2t} \rightarrow 2$ is not a solution to homogeneous eqn.

$$y_p = t^s (Ae^{2t}) \Rightarrow s = 0.$$

$$y_p = Ae^{2t}$$

$$y_p' = 2Ae^{2t}$$

$$y_p'' = 4Ae^{2t}$$

$$y_p'' + y_p = (4A + A)e^{2t} = 8e^{2t}$$

$$\Rightarrow 5A = 8$$

$$\Rightarrow A = \frac{8}{5}$$

$$y = C_1 \cos(t) + C_2 \sin(t) + \frac{8}{5} e^{2t}$$