MTH204 Quiz 1 Solution & Rubric

Q.7.

$$\frac{dy}{dt} + 5y = 10 + 29\cos 2t$$

$$y(t) = e^{-5t}\int e^{5t}(10 + 29\cos 2t) + Ce^{-5t} \} +1$$

$$y(t) = 2 + 5\cos 2t + 2\sin 2t + Ce^{-5t} \} +1$$

$$y(0) = 2 + 5 + C = 0 \Rightarrow C = -7 \} +1$$

$$y(\pi) = 2 + 5 - 7e^{-5\pi} = 7 - 7e^{-5\pi} \} +1$$

Q.8.

$$y''' - 4y' = 10\cos x + 5\sin x$$

$$y''' - 4y' = 0 \Rightarrow y = C_1 + C_2 e^{2x} + C_3 e^{-2x} \} +1$$

$$\lambda^3 - 4\lambda = 0$$

$$\lambda = 0, 2, -2.$$

$$y_p = A\cos x + B\sin x \} +1$$

$$A = 1, \quad B = -2 \} +0.5, +0.5$$

$$y = C_1 + C_2 e^{2x} + C_3 e^{-2x} + \cos x - 2\sin x \} +1$$