

Answers to exercises

A.01 Answers to the exercises of Lecture 03

Note: the indices of the constants are arbitrary.

1. $y_h(t) = C_1 e^{2t} + C_2 e^{-t}$.
2. $y_h(t) = C_1 e^{-3t} + C_2 t e^{-3t}$.
3. $y_h(t) = C_1 e^{(-5+j3)t} + C_2 e^{(-5-j3)t}$.
4. $y_h(t) = C_1 e^{3t} + C_2 e^{2t} + C_3 t e^{2t} + C_4 e^{j4t} + C_5 e^{-j4t}$.

A.02 Answers to the exercises of Lecture 04

1. $y_p(t) = -\frac{3}{2}$.
2. $y_p(t) = \frac{5}{2} t^2 e^{-3t}$.
3. $y_p(t) = \frac{4}{13} \cos(3t) + \frac{6}{13} \sin(3t)$.
4. $y_p(t) = \frac{1}{80} t + \frac{9}{400}$.

A.03 Answers to the exercises of Lecture 05

1. $y(t) = -\frac{3}{2} + \frac{7}{3} e^{-t} + \frac{7}{6} e^{2t}$.
2. $y(t) = \frac{5}{2} t^2 e^{-3t}$.
3. $y(t) = \frac{48}{13} e^{-2t} + \frac{4}{13} \cos(3t) + \frac{6}{13} \sin(3t)$.
4. $y(t) = -\frac{9}{1025} e^{-5t} - \frac{9}{656} \cos(4t) + \frac{619}{2624} \sin(4t) + \frac{1}{80} t + \frac{9}{400}$.