

ANSWERS TO HANDOUT 4

1) $y_h = c_1 e^{2x} + c_2 e^x$

a) $y_p = A \sin x + B \cos x$

b) $y_p = Ax^2 + Bx + C$

c) $y_p = Ae^{-x}$

d) $y_p = Axe^{2x}$

e) $y_p = Ae^x \cos x + Be^x \sin x$

5) $y_h = c_1 + c_2 \cos x + c_3 \sin x$

a) $y_p = (Ax^2 + Bx + C)x$

b) $y_p = Ax \cos x + Bx \sin x$

c) $y_p = Ae^x \cos x + Be^x \sin x$

d) $y_p = (Ax + B)e^x + Cx$

e) $y_p = Ax \sin x + Bx \cos x$

2) $y_h = c_1 e^{-x} + c_2 x e^{-x}$

a) $y_p = Ax^2 + Bx + C$

b) $y_p = Ae^{-2x} \sin x + Be^{-2x} \cos x$

c) $y_p = Ae^{-2x}$

d) $y_p = (Ax + B) \cos x + (Cx + D) \sin x$

e) $y_p = Ae^{5x} + Bx + C$

6) $y_h = c_1 \cos 2x + c_2 \sin 2x$

a) $y_p = Ax \sin 2x + Bx \cos 2x$

b) $y_p = A + Bx \cos 2x + Cx \sin 2x$

c) $y_p = Ae^x + Bx^2 + Cx + D$

d) $y_p = (Ax + B) \sin 4x + (Cx + D) \cos 4x$

e) $y_p = Ax \sin 2x + Bx \cos 2x + Cx^2 + Dx + E$

3) $y_h = e^{-x}(c_1 \cos x + c_2 \sin x)$

a) $y_p = A \sin x + B \cos x$

b) $y_p = A \cos 3x + B \sin 3x$

c) $y_p = Ae^{-x}$

d) $y_p = (Ax + B)xe^{-x} \cos x +$
 $(Cx + D)xe^{-x} \sin x$

e) $y_p = Ax^2 + Bx + C + D \sin 2x + E \cos 2x$

7) $y_h = c_1 + c_2 x + c_3 e^{-3x}$

a) $y_p = (Ax + B)xe^{-3x}$

b) $y_p = A \sin x + B \cos x$

c) $y_p = (Ax^2 + Bx + c)x^2$

d) $y_p = Ae^x + B \sin x + C \cos x + (Dx + E)x^2$

e) $y_p = A \sin 3x + B \cos 3x + (Cx^2 + Dx + E)x^2$

4) $y_h = c_1 \cos 4x + c_2 \sin 4x$

a) $y_p = Ae^x + Bx^2 + Cx + D$

b) $y_p = (Ax + B)x \sin 4x + (Cx + D)x \cos 4x$

c) $y_p = Ae^x \sin 4x + Be^x \cos 4x$

d) $y_p = (Ax^2 + Bx + C)e^x + D$

e) $y_p = (Ax + B) \sin x + (Cx + D) \cos x + E \cos 2x + F \sin 2x$

8) $y_h = c_1 e^{-x} + c_2 \sin x + c_3 \cos x$

a) $y_p = Ae^x$

b) $y_p = Axe^{-x}$

c) $y_p = Ax \cos x + Bx \sin x$

d) $y_p = Ax^2 + Bx + C + De^x \sin x + Ee^x \cos x$

e) $y_p = Ax + B + (Cx \cos x + Dx \sin x) + Exe^{-x}$

9) $y_h = e^{-(1/2)x} \left[c_1 \cos \frac{\sqrt{3}}{2} x + c_2 \sin \frac{\sqrt{3}}{2} x \right]$

a) $y_p = Ax^x + Bx + C$

b) $y_p = (Ax + B)e^x$

c) $y_p = Axe^{-(1/2)x} \sin \frac{\sqrt{3}}{2} x + Bxe^{-(1/2)x} \cos \frac{\sqrt{3}}{2} x$

d) $y_p = Ae^x + Be^{-x}$

e) $y_p = (Ax + B) \sin x + (Cx + D) \cos x$

10) $y_h = c_1 \cos x + c_2 \sin x$

a) $y_p = Ae^x \cos x + Be^x \sin x$

b) $y_p = A \sin 2x + B \cos 2x$

c) $y_p = Ae^x + Bx \sin x + Cx \cos x$

d) $y_p = Ax^2 + Bx + C + Dx \sin x + Ex \cos x$

e) $y_p = Ae^{4x} + Be^{2x}$

11) $y_h = e^{-2x} (c_1 \cos x + c_2 \sin x)$

a) $y_p = Ae^{-2x}$

b) $y_p = A \sin x + B \cos x$

c) $y_p = Axe^{-2x} \cos x + Bxe^{-2x} \sin x + C$

d) $y_p = Ax + B + Ce^x$

e) $y_p = Ae^{-2x} + B \sin x + C \cos x$

12) $y_h = e^{-(3/2)x} \left(c_1 \cos \frac{\sqrt{11}}{2} x + c_2 \sin \frac{\sqrt{11}}{2} x \right)$

a) $y_p = Ax^2 + Bx + C + De^x + E \sin x + F \cos x$

b) $y_p = (Ax^2 + Bx + C)e^x \sin x + (Dx^2 + Ex + F)e^x \cos x$

c) $y_p = (Ax^2 + Bx + C)e^x$

d) $y_p = (Ax^2 + Bx + C) \sin x + (Dx^2 + Ex + F) \cos x$

e) $y_p = Ae^x \sin x + Be^x \cos x$