

$$1. \quad y'' - 9y = x$$

$$y_h = C_1 e^{-3x} + C_2 e^{3x}$$

$$y_p =$$

$$10. \quad y'' + 4y' = \cos x$$

$$y_h = C_1 e^{-4x} + C_2$$

$$y_p =$$

$$2. \quad y'' + y' - 6y = 2x^2$$

$$y_h = C_1 e^{-3x} + C_2 e^{2x}$$

$$y_p =$$

$$11. \quad y'' + 4y = 2 \cos 2x$$

$$y_h = C_1 \cos 2x + C_2 \sin 2x$$

$$y_p =$$

$$3. \quad y'' - 2y' + y = x^2 + x$$

$$y_h = C_1 e^x + C_2 x e^x$$

$$y_p =$$

$$12. \quad y'' + 9y = \sin 3x$$

$$y_h = C_1 \cos 3x + C_2 \sin 3x$$

$$y_p =$$

$$4. \quad y'' + y' = 4x$$

$$y_h = C_1 e^{-x} + C_2$$

$$y_p =$$

$$13. \quad y'' + 9y = \sin x + e^{2x}$$

$$y_h = C_1 \cos 3x + C_2 \sin 3x$$

$$y_p =$$

$$5. \quad y'' - 5y' + 6y = e^x$$

$$y_h = C_1 e^{2x} + C_2 e^{3x}$$

$$y_p =$$

$$14. \quad y'' + y' = e^x + 3x$$

$$y_h = C_1 e^{-x} + C_2$$

$$y_p =$$

$$6. \quad y'' + 6y' + 9y = 2e^{-x}$$

$$y_h = C_1 e^{-3x} + C_2 x e^{-3x}$$

$$y_p =$$

$$15. \quad y'' - 5y' + 6y = 2e^x$$

$$y_h = C_1 e^{2x} + C_2 e^{3x}$$

$$y_p =$$

$$7. \quad y'' + 4y' + 3y = e^{-3x}$$

$$y_h = C_1 e^{-3x} + C_2 e^{-x}$$

$$y_p =$$

$$16. \quad y'' - 4y = 4 \sin x$$

$$y_h = C_1 e^{-2x} + C_2 e^{2x}$$

$$y_p =$$

$$8. \quad y'' + 2y' + 2y = 3e^{-2x}$$

$$y_h = C_1 e^{-x} \cos x + C_2 e^{-x} \sin x$$

$$y_p =$$

$$17. \quad y'' - 3y' + 2y = 5x + 2$$

$$y_h = C_1 e^x + C_2 e^{2x}$$

$$y_p =$$

$$9. \quad y'' - y' - 2y = 2 \sin x$$

$$y_h = C_1 e^{-x} + C_2 e^{2x}$$

$$y_p =$$

$$18. \quad y'' - 4y = e^{2x}$$

$$y_h = C_1 e^{-2x} + C_2 e^{2x}$$

$$y_p =$$

$$\begin{aligned}
1. \quad & y'' - 9y = x \\
& y_h = C_1 e^{-3x} + C_2 e^{3x} \\
& y_p = B_1 x + B_0
\end{aligned}$$

$$\begin{aligned}
2. \quad & y'' + y' - 6y = 2x^2 \\
& y_h = C_1 e^{-3x} + C_2 e^{2x} \\
& y_p = B_2 x^2 + B_1 x + B_0
\end{aligned}$$

$$\begin{aligned}
3. \quad & y'' - 2y' + y = x^2 + x \\
& y_h = C_1 e^x + C_2 x e^x \\
& y_p = B_2 x^2 + B_1 x + B_0
\end{aligned}$$

$$\begin{aligned}
4. \quad & y'' + y' = 4x \\
& y_h = C_1 e^{-x} + C_2 \\
& y_p = B_1 x^2 + B_0 x \text{ (Cf. #4 on p. 799.)}
\end{aligned}$$

$$\begin{aligned}
5. \quad & y'' - 5y' + 6y = e^x \\
& y_h = C_1 e^{2x} + C_2 e^{3x} \\
& y_p = B e^x
\end{aligned}$$

$$\begin{aligned}
6. \quad & y'' + 6y' + 9y = 2e^{-x} \\
& y_h = C_1 e^{-3x} + C_2 x e^{-3x} \\
& y_p = B e^{-x}
\end{aligned}$$

$$\begin{aligned}
7. \quad & y'' + 4y' + 3y = e^{-3x} \\
& y_h = C_1 e^{-3x} + C_2 e^{-x} \\
& y_p = B x e^{-3x}
\end{aligned}$$

$$\begin{aligned}
8. \quad & y'' + 2y' + 2y = 3e^{-2x} \\
& y_h = C_1 e^{-x} \cos x + C_2 e^{-x} \sin x \\
& y_p = B e^{-2x}
\end{aligned}$$

$$\begin{aligned}
9. \quad & y'' - y' - 2y = 2 \sin x \\
& y_h = C_1 e^{-x} + C_2 e^{2x} \\
& y_p = B \cos x + C \sin x
\end{aligned}$$

$$\begin{aligned}
10. \quad & y'' + 4y' = \cos x \\
& y_h = C_1 e^{-4x} + C_2 \\
& y_p = B \cos x + C \sin x
\end{aligned}$$

$$\begin{aligned}
11. \quad & y'' + 4y = 2 \cos 2x \\
& y_h = C_1 \cos 2x + C_2 \sin 2x \\
& y_p = B x \cos 2x + C x \sin 2x
\end{aligned}$$

$$\begin{aligned}
12. \quad & y'' + 9y = \sin 3x \\
& y_h = C_1 \cos 3x + C_2 \sin 3x \\
& y_p = B x \cos 3x + C x \sin 3x
\end{aligned}$$

$$\begin{aligned}
13. \quad & y'' + 9y = \sin x + e^{2x} \\
& y_h = C_1 \cos 3x + C_2 \sin 3x \\
& y_p = B \cos x + C \sin x + D e^{2x}
\end{aligned}$$

$$\begin{aligned}
14. \quad & y'' + y' = e^x + 3x \\
& y_h = C_1 e^{-x} + C_2 \\
& y_p = B e^x + B_1 x^2 + B_0 x
\end{aligned}$$

$$\begin{aligned}
15. \quad & y'' - 5y' + 6y = 2e^x \\
& y_h = C_1 e^{2x} + C_2 e^{3x} \\
& y_p = B e^x
\end{aligned}$$

$$\begin{aligned}
16. \quad & y'' - 4y = 4 \sin x \\
& y_h = C_1 e^{-2x} + C_2 e^{2x} \\
& y_p = B \cos x + C \sin x
\end{aligned}$$

$$\begin{aligned}
17. \quad & y'' - 3y' + 2y = 5x + 2 \\
& y_h = C_1 e^x + C_2 e^{2x} \\
& y_p = B_1 x + B_0
\end{aligned}$$

$$\begin{aligned}
18. \quad & y'' - 4y = e^{2x} \\
& y_h = C_1 e^{-2x} + C_2 e^{2x} \\
& y_p = B x e^{2x}
\end{aligned}$$