

13 Q

General solution of

$$\frac{d^4 y}{dx^4} + 2 \frac{d^2 y}{dx^2} + y = 0 \text{ is}$$

MTH-166
Practice Questions

(a) $y = (c_1 + c_2 x) \sin x + (c_3 + c_4 x) \cos x$

(b) $y = c_1 \sin x + c_2 \cos x + x \sin x + x \cos x$

(c) $y = c_1 \sin x + c_2 \cos x + (3 + \tan x) + c_3 \cos x$

(d) $y = c_1 \sin x + c_2 \cos x + (3x + 4)$

Answer (a)

14 Q

The general solution of $(D^2 + D - 2)y = e^x$ is

(a) $y = c_1 e^x + c_2 e^{-2x} + \frac{1}{3} x e^x$

(b) $y = c_1 e^x + c_2 e^{-2x}$

(c) $y = c_1 e^x + c_2 e^{-2x} + \frac{1}{6} x^2 e^x$

(d) $y = \frac{1}{3} x e^x + (c_1 + c_2 x) e^{-2x}$

Answer (c)

15 Q

P.I. of $(D^2 + 9)y = \sin 3x$ is

(a) $\frac{1}{2} \sin 3x$

(b) $-\frac{1}{2} x \cos 3x$

(c) $\frac{1}{2} x \cos 24x$

(d) $-\frac{1}{2} x \cos 24x$

Answer (b)

16 Q

General solution of $(D^2 + 4)y = \sin^2 x$ is

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

(b) $y = c_1 \cos 2x + c_2 \sin 2x + \frac{1}{8} - \frac{x}{8} \sin 2x$

(c) $y = (c_1 + c_2 \cos 2x) e^{-2x} - \frac{1}{8} \cos 2x$

(d) $y = c_1 \cos(2x + c_2) + \frac{1}{8}$

Answer (b)

17 Q

P.I. of $(D^2 + 4)y = x$ is

(a) $x e^{-2x}$

(b) $x \cos 2x$

(c) $x \sin 2x$

(d) $\frac{x}{4}$

Answer (d)

18 Q

The number of I.I. Solutions of

$$\frac{d^4 y}{dx^4} - \frac{d^3 y}{dx^3} - 3 \frac{d^2 y}{dx^2} + 5 \frac{dy}{dx} - 4y = 0 \text{ of the}$$

form e^{ax} (a being a real number) is

(a) one

(b) two

(c) three

(d) four

Answer (b)