

19) Q₁ The general solution of $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = e^{-x} \cos x$ is

MTN-166
Practice
Question

- (a) $(1 + (1 + \sin x))e^{-x}$
- (b) $(1 + (1 + \sin x))e^{-x}$
- (c) $(1 + (1 + \cos x))e^{-x}$
- (d) $(1 + (1 + \cos x))e^{-x}$

Answer

(d)

20) Q₁

Solution of $\frac{d^2y}{dx^2} + \frac{dy}{dx} - 2y = 0$, $y(0) = 0$, $y'(0) = 3$ is

- (a) $e^x + e^{-2x}$
- (b) $e^x - e^{-2x}$
- (c) $e^x - e^{2x}$
- (d) $e^x + e^{2x}$

Answer

(b)

21) Q₁

General Solution of $\frac{d^2y}{dx^2} + y = \sin^3 x$ is

- (a) $y = A \cos(\frac{1}{2}x + B) + \frac{1}{24} \sin x - \frac{1}{24} \sin 3x$
- (b) $y = A e^{3x} + B e^{-3x} + \frac{1}{32} \sin x + \frac{1}{32} \cos 3x$
- (c) $y = A + Bx e^{3x} - \frac{5}{12} \sin 3x$
- (d) $y = A \sin(\frac{1}{2}x + B) + \frac{3}{32} \sin x + \frac{\pi}{24} \cos 3x$ Answer (d)

22) Q₁

The set of I.F. solutions of $\frac{d^4y}{dx^4} - \frac{d^2y}{dx^2} = 0$ is

- (a) $\{1, x, e^x, e^{-x}\}$
- (b) $\{1, x, e^{-x}, x e^{-x}\}$
- (c) $\{1, x, e^x, x e^x\}$
- (d) $\{1, x, e^x, x e^{-x}\}$

Answer

(a)

23) Q₁

P.I. of $(D^2 + a^2) y = \sin ax$ is

- (a) $-\frac{x}{2a^2} \cos ax$
- (b) $\frac{x}{2a^2} \sin ax$
- (c) $-\frac{x}{2a^2} \sin ax$
- (d) $\frac{x}{2a^2} \cos ax$

Answer

(c)

24) Q₁

Solution of $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 2y = 0$, $y(0) = 0$, $y'(0) = 1$ is

- (a) $y = e^{-x} \cos x$
- (b) $y = e^{-x} \sin x$
- (c) $y = e^{-x} (\cos x + \sin x)$
- (d) $y = \sin x$

Answer

(b)