

TOPIC

Mathematics – Section I – Question 4

QUESTION

The form of the particular solution to the ordinary differential equation

$$\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = e^{2x} + \sin x, y(0) = 5, \frac{dy}{dx}(0) = 6$$

is

- (A) $Ax^2e^{2x} + B \sin x + C \cos x$
- (B) $Ae^{2x} + B \sin x + C \cos x$
- (C) $Ax^2e^{2x} + B \sin x$
- (D) $Ae^{2x} + B \sin x$

HINT

The characteristic equation has repeated roots. The particular part of the solution will have the form of the right-hand side and its derivatives, unless they have the form of the homogeneous part of the solution.

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