TOPIC
Mathematics – Section I – Question 14

QUESTION
A differential equation is considered ordinary if it has

(A) one dependent variable
(B) more than one dependent variable
(C) one independent variable
(D) more than one independent variable

HINT
Think about how you differentiate between partial and ordinary differential equations.

SOLUTION
A differential equation is considered ordinary if it has *one independent* variable. Ordinary differential equations can have as many dependent variables as needed. For example the coupled ordinary differential equations

$$2\frac{dy}{dx} + y + z = e^x, y(0) = 6$$
$$3\frac{d^2z}{dx^2} + 3y + \frac{dz}{dx} = sin\, x\,, z(0) = 5, \frac{dz}{dx}(0) = 7$$

have two dependent variables y and z, and one independent variable, x.

ANSWER
(C)

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