Answer on Question #69603 – Math – Differential Equations

Question

If $y = 2x + Ce^x$ is a solution of the differential equation

$$\frac{dy}{dx} - y = 2(1 - x)$$

then find the particular solution satisfied by $x = 0, y = 3$.

Solution

Applying the condition $y = 3$ when $x = 0$ gives:

$$2 \cdot 0 + Ce^0 = 3$$

$$0 + C = 3$$

$$C = 3.$$

Then the particular solution satisfied by given condition is

$$y = 2x + 3e^x.$$

Answer: $y = 2x + 3e^x$.

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