Find the particular solution of the differential equation

$$\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 8\sin x + 19\cos x$$

given that $y = 7$ and $\dfrac{dy}{dx} = \dfrac{1}{2}$ when $x = 0$. **10**

Answer:

$$y = 5e^{3x} - 14xe^{3x} - \frac{1}{2}\sin x + 2\cos x$$