

1. **March/2023/Paper\_9709/32/No.9**

The variables  $x$  and  $y$  satisfy the differential equation

$$\frac{dy}{dx} = e^{3y} \sin^2 2x.$$

It is given that  $y = 0$  when  $x = 0$ .

Solve the differential equation and find the value of  $y$  when  $x = \frac{1}{2}$ .

[7]

