

$$\frac{\partial^2 P}{\partial x^2} + \frac{\partial^2 P}{\partial y^2} = 4e^{-2xy} \sin(x^2 - y^2) (y^2 - x^2)$$

$$+ e^{-2xy} \cos(x^2 - y^2) (2 - 8xy)$$

$$- 4e^{-2xy} \sin(x^2 - y^2) (y^2 - x^2)$$

$$- e^{-2xy} \cos(x^2 - y^2) (2 - 8xy) = 0$$

d'où P est harmonique.