① $f(x,y) = 3xy + e^{xy} + 2\operatorname{sen}(x+y)$

$f_x = 3xy + ye^{xy} + 2\cos(x+y)$

$f_x = 3y + ye^{xy} + 2\cos(x+y) = 5.08 = 4 + 2\cos(1)$

$f_y = 3xy + xe^{xy} + 2\operatorname{sen}(x+y)$

$f_y = 3x + xe^{xy} + 2\cos(x+y) = 2\cos(1) = 1.08$

② $4U_{xx} - U_{yy} = 0$ $\qquad 0 = \operatorname{sen}(x-2y)$

$\operatorname{sen}(x-2y)$

$f_x' = \cos(x-2y)$

$f_x'' = -\operatorname{sen}(x-2y)$

$f_y' = -\operatorname{sen}(x-2y)\,(x-2y)'$

$= (-2y + (-x))(\operatorname{sen}(x-2y))$

$= -2\operatorname{sen}(x-2y)$

$f_{yy}' = -4\operatorname{sen}(x-2y)$

$-4\operatorname{sen}(x-2y) - (-4\operatorname{sen}(x-2y)) = 0$