5. For the function $f(x, y, z) = xe^y + y^2cos(z)$, calculate the Hessian matrix.

- $H = \begin{bmatrix} 0 & e^y & 0 \\ e^y & xe^y + 2cos(z) & 2ysin(z) \\ 0 & 2ysin(z) & y^2cos(z) \end{bmatrix}$
- $H = \begin{bmatrix} 0 & e^y & 0 \\ e^y & xe^y + 2sin(z) & -2ycos(z) \\ 0 & -2ycos(z) & -y^2sin(z) \end{bmatrix}$
- $H = \begin{bmatrix} 0 & e^y & 0 \\ e^y & xe^y + 2cos(z) & -2ysin(z) \\ 0 & -2ysin(z) & -y^2cos(z) \end{bmatrix}$
- $H = \begin{bmatrix} 0 & e^y & 0 \\ e^y & xe^y + 2sin(z) & 2ycos(z) \\ 0 & 2ycos(z) & y^2sin(z) \end{bmatrix}$

Correct
Well done!