

$$z_x = (e^{2x})_x \sin 3y$$

$$= 2e^{2x} \sin 3y$$

$$z_y = e^{2x} (\sin 3y)_y$$

$$= 3e^{2x} \cos 3y$$

$$z_{xx} = 2(e^{2x})_x \sin 3y = 4e^{2x} \sin 3y$$

$$z_{yy} = 3e^{2x}(\cos 3y)_y = -9e^{2x} \sin 3y$$

$$z_{xy} = 2e^{2x}(\sin 3y)_y = 6e^{2x} \cos 3y$$

$$z_{yx} = z_{xy}$$