

$$f_{yx} = -2y (-2x e^{-x^2-y^2}) = 4xy e^{-x^2-y^2}$$

$$f_{yy} = -2 e^{-x^2-y^2} - 2y (-2y) e^{-x^2-y^2} = (4y^2 - 2) e^{-x^2-y^2} \quad - (17/10)$$

$$(5) \frac{d^n}{dx^n} e^{ax} = a^n e^{ax}$$

$$(\cos by)' = -b \sin by = b \cos (by + \frac{\pi}{2})$$

$$\text{同様に } 12. \frac{d^n}{dy^n} (\cos by) = b^n \cos (by + \frac{n\pi}{2})$$

$$5, 7. \frac{\partial^{m+n}}{\partial x^m \partial y^n} f = \frac{\partial^m}{\partial x^m} \left(\frac{\partial^n}{\partial y^n} e^{ax} \cos by \right)$$

$$= \frac{\partial^m}{\partial x^m} e^{ax} b^n \cos (by + \frac{n\pi}{2})$$

$$= a^m e^{ax} \cdot b^n \cos (by + \frac{n\pi}{2})$$

$$= a^m b^n e^{ax} \cos (by + \frac{n\pi}{2}) \quad - (17/10)$$