Lösungen Quiz 14

Version A

Was sind die korrekten Richtungsableitungen von $f(x,y) = e^{\cos(x)y}$?

(a) $\frac{\partial f}{\partial x} = \cos(x)e^{\cos(x)y}, \quad \frac{\partial f}{\partial y} = ye^{\cos(x)y}.$

(b) $\frac{\partial f}{\partial x} = -\sin(x)ye^{\cos(x)y}, \quad \frac{\partial f}{\partial y} = \cos(x)e^{\cos(x)y}.$

(c) $\frac{\partial f}{\partial x} = e^{-\sin(x)y}, \quad \frac{\partial f}{\partial y} = e^{\cos(x)}.$

(d) $\frac{\partial f}{\partial x} = ye^{\cos(x)y}, \quad \frac{\partial f}{\partial y} = \cos(x)e^{\cos(x)y}.$

Lösung: (b)

Version B

Was sind die korrekten Richtungsableitungen von $f(x,y,z) = x^3y^2z$?

(a) $\frac{\partial f}{\partial x} = 5x^4y^2z, \quad \frac{\partial f}{\partial y} = 4x^3y^3z, \quad \frac{\partial f}{\partial z} = 3x^3y^2z^2.$

(b) $\frac{\partial f}{\partial x} = 6x^2y, \quad \frac{\partial f}{\partial y} = 6x^2y, \quad \frac{\partial f}{\partial z} = 6x^2y.$

(c) $\frac{\partial f}{\partial x} = 3x^2, \quad \frac{\partial f}{\partial y} = 2y, \quad \frac{\partial f}{\partial z} = 1.$

(d) $\frac{\partial f}{\partial x} = 3x^2y^2z, \quad \frac{\partial f}{\partial y} = 2x^3yz, \quad \frac{\partial f}{\partial z} = x^3y^2.$

Lösung: (d)