

เฉลยแบบฝึกหัด 14.3

$$1.1. \quad \begin{aligned} f_x &= 3y - 16x^3y^4 \\ f_y &= 3x - 16x^4y^3 \end{aligned}$$

$$1.3. \quad \begin{aligned} f_x &= \frac{\tan \sqrt{x+y}}{2\sqrt{x+y}} \\ f_y &= \frac{\tan \sqrt{x+y}}{2\sqrt{x+y}} \end{aligned}$$

$$1.5. \quad \begin{aligned} f_x &= 2x + y^3 \cos xy \\ f_y &= 2y \sin xy + xy^2 \cos xy \end{aligned}$$

$$1.7. \quad \begin{aligned} f_x &= y^2 x^{(y^2-1)} \\ f_y &= 2yx^{y^2} \ln x \end{aligned}$$

$$1.9. \quad \begin{aligned} f_x &= -\frac{y^2}{x^2 + y^4} \\ f_y &= \frac{2xy}{x^2 + y^4} \end{aligned}$$

$$1.2. \quad \begin{aligned} f_x &= \frac{2xy \cos^2(x^2y) \sin(x^2y)}{[1 - \cos^3(x^2y)]^{\frac{2}{3}}} \\ f_y &= \frac{x^2 \cos^2(x^2y) \sin(x^2y)}{[1 - \cos^3(x^2y)]^{\frac{2}{3}}} \end{aligned}$$

$$1.4. \quad \begin{aligned} f_x &= -\frac{2y}{(x-y)^2} \\ f_y &= \frac{2x}{(x-y)^2} \end{aligned}$$

$$1.6. \quad \begin{aligned} f_x &= 8xy^3 e^{x^2y^3} - 5x^4y^4 \sin(x^5y^4) \\ f_y &= 12x^2y^2 e^{x^2y^3} - 4x^5y^3 \sin(x^5y^4) \end{aligned}$$

$$1.8. \quad \begin{aligned} f_x &= -\frac{e^{-\frac{x}{y}}}{y} - \frac{1}{x} \\ f_y &= \frac{xe^{-\frac{x}{y}}}{y^2} + \frac{1}{y} \end{aligned}$$

$$1.10. \quad \begin{aligned} f_x &= 2y^3 e^{2x+3z} \\ f_y &= 3y^2 e^{2x+3z} \\ f_z &= 3y^3 e^{2x+3z} \end{aligned}$$

2. $D_1f(1,1) = 3e$, $D_2f(1,1) = 2e$

3. $f_x(2,1) = 8\sqrt{3}$, $f_y(2,1) = 2\sqrt{3}$

4. $\frac{\partial f}{\partial x}(1, \frac{1}{2}, \pi) = 1$, $\frac{\partial f}{\partial z}(1, \frac{1}{2}, \pi) = 0$

5. $f_x(0,0) = 0$, $f_y(0,0) = 1$

6. $\frac{\partial f}{\partial x}(0,0) = 0$, $\frac{\partial f}{\partial y}(0,0) = 0$

7. 7.1 $D_1f(0,y) = -1$, $D_1f(0,0) = 1$

7.2 $D_2f(x,0) = -2$, $D_2f(0,0) = 0$