14-2

2.3.7.12.14.18.單純代入

21.22.單純代入有問題 令一新變數後使用 l'Hôpital's Rule

14-3

7.16.單純偏微分，注意 chain rule

21.偏微分+微積分基本定理

22.使用等比級數簡化後偏微 注意前提條件為$|xy| < 1$

25.32.43.52. 單純偏微分，注意 chain rule

66.類似隱函數微分，將$\frac{dx}{dz}$改寫成$\frac{\partial x}{\partial z}$

72 使用偏微分定義檢查$\mathrm{x} = 0$ 和 $\mathrm{x} \neq 0$.

14-4

3.5.chain rule 例:$\frac{dw}{dt} = \frac{\partial w}{\partial x}\frac{dx}{dt}$

8.9.chain rule 例$\frac{\partial z}{\partial u} = \frac{\partial z}{\partial x}\frac{\partial x}{\partial u} + \frac{\partial z}{\partial y}\frac{\partial y}{\partial u}$

11.21.chain rule

28.$\frac{dy}{dx} = -\frac{F_x}{F_y}$

29.同 28

35.chain rule

14-2

2. 0

3. $2\sqrt{6}$

7. $\frac{1}{2}$

12. -2

14. 2

18. 4

21. 1

22. 0

14-3

7.$\frac{\partial f}{\partial x} = \frac{x}{\sqrt{x^2+y^2}}$ $\frac{\partial f}{\partial y} = \frac{y}{\sqrt{x^2+y^2}}$

16. $\frac{\partial f}{\partial x} = ye^{xy}\ln y$ $\frac{\partial f}{\partial y} = xe^{xy}\ln y + \frac{e^{xy}}{y}$

21.$\frac{\partial f}{\partial x} = -g(x)$ $\frac{\partial f}{\partial y} = g(y)$

22.$\frac{\partial f}{\partial x} = \frac{y}{(1-xy)^2}$ $\frac{\partial f}{\partial y} = \frac{x}{(1-xy)^2}$

25.$f_x = 1$ $f_y = -\frac{y}{\sqrt{y^2+z^2}}$ $f_z = -\frac{z}{\sqrt{y^2+z^2}}$

32.$f_x = -yze^{-xyz}$ $f_y = -xze^{-xyz}$ $f_z = -xye^{-xyz}$

43$\frac{\partial^2 g}{\partial x^2} = 2y - y\sin x$,$\frac{\partial^2 g}{\partial y^2} = -\cos y$,$\frac{\partial^2 g}{\partial x \partial y} = 2x + \cos x$

52.$\frac{\partial^2 w}{\partial x \partial y} = \frac{1}{x} + \frac{1}{y}$ $\frac{\partial^2 w}{\partial y \partial x} = \frac{1}{x} + \frac{1}{y}$

66.$\frac{\partial x}{\partial z} = \frac{-1}{6}$

72.$\mathrm{x} = 0$時f_x不存在 $\mathrm{x} \neq 0$時 $f_x = \begin{cases} \frac{1}{2\sqrt{x}} & if\ x > 0 \\ 2x & if\ x < 0 \end{cases}$ $f_y = 0$ $f_{xy} = 0$ for all points except $\mathrm{x} = 0$

$f_{yx} = 0$ for all points

14-4

3. 1

5. $\pi + 1$

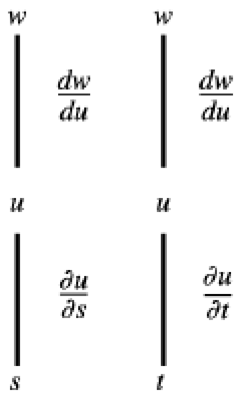
8. $-1, -1$

9. $3, -\frac{3}{2}$

11.$\frac{\partial u}{\partial x} = 0 \frac{\partial u}{\partial y} = 1 \frac{\partial u}{\partial z} = -2$

21.

$$\frac{\partial w}{\partial s} = \frac{dw}{du}\frac{\partial u}{\partial s} \qquad \frac{\partial w}{\partial t} = \frac{dw}{du}\frac{\partial u}{\partial t}$$



28.$-(2 + \ln 2)$

29.$-\frac{3}{4}$

35.-7