Corrections - Volume II

- **Page 14.** The fourth line from the top should read:

$$[0,1] = \bigcap_{n=1}^{\infty} \left(-\frac{1}{n}, 1 + \frac{1}{n} \right).$$

- **Page 19.** The sixth line from the top should read:

$$d\left((a_k)_{k\in\mathbb{N}}, (b_k)_{k\in\mathbb{N}}\right) := \sum_{k=1}^{\infty} 2^{-k}|a_k - b_k|$$

- **Page 37.** The sixth line from the top should read: ... such that $d_2(f_N(x), f(x)) < \frac{\epsilon}{3}$ for all $x \in X$ if $n \geq N$.

- **Page 45.** The third line from the bottom should read:

$$K \subset U_{j_1} \cup \ldots \cup U_{j_{N-1}} \cup U_{j_0}$$

- **Page 45.** The second line from the bottom should read: ... Thus $(U_{j_l})_{l=0,\ldots,N-1}$ is a finite subcovering ...

- **Page 46.** The last line should read:

$$K \subset \bigcup_{j=1}^{m} B_1(x_j) \subset B_r(x_1)$$

- **Page 77.** The fifth line from the bottom should read: ... the **partial derivative** of f ...

- **Page 78.** The phrase “partial derivative” in the last but one sentence of **Definition 5.4.** should be in bold font.

- **Page 81.** The sixth line from the bottom should read:

$$\frac{\partial^2 g}{\partial y \partial x}(0,0) = \lim_{h\to 0} \frac{1}{h} \left(\frac{\partial g}{\partial x}(0,h) - \frac{\partial g}{\partial x}(0,0) \right)$$

- **Page 86.** The tenth line from the top should read: As before we find $\tilde{\xi}$ and $\tilde{\eta}$ such that $|\tilde{\xi}| \leq |x|$, $|\tilde{\eta}| \leq |y|$ and

$$G_x(y) - G_x(0) = G'_x(\tilde{\eta})y$$

- **Page 96.** The second line in the proof of theorem 6.3. should read: represented by a matrix $A \in M(m, n, \mathbb{R})$ and a ...

- **Page 97.** The fifth line from the top should read:

$$\frac{\partial f_j}{\partial x_l}(x) = \lim_{h \to 0} \frac{f_j(x + he_l) - f_j(x)}{h} = a_{jl}(x) + \lim_{h \to 0} \frac{\varphi_{X,j}(he_j)}{h} = a_{jl}(x),$$

- **Page 98.** The terms a_{lj} from lines 11 from the bottom to 8 from the bottom should be replaced by a_{jl}, i.e.
  We now set $a_{jl} := \frac{\partial f_j(x)}{\partial x_l} = D_l f_j(x)$ and

$$\varphi_j(\xi) = \sum_{l=1}^{n} (D_l f_j(y^{(l)}) - a_{jl})\xi_l, \;\; 1 \leq j \leq m.$$

  Since $x \mapsto \frac{\partial f_j(x)}{\partial x_l}$ is continuous at x it follows that

$$\lim_{\xi \to 0} ((D_l f_j)(y^{(l)}) - a_{jl}) = 0, \;\; 1 \leq j \leq m,$$

- **Page 98.** The second line from the bottom should read: $J_S(r, \vartheta, \varphi) =$ ...

- **Page 98.** The last line should read:

$$= \begin{pmatrix} \sin\vartheta \cos\varphi & r\cos\vartheta\cos\varphi & -r\sin\vartheta\sin\varphi \\ \sin\vartheta\sin\varphi & r\cos\vartheta\sin\varphi & r\sin\vartheta\cos\varphi \\ \cos\vartheta & -r\sin\vartheta & 0 \end{pmatrix}.$$

- **Page 99.** The second line from the top should read:

$$\det J_S(r, \vartheta, \varphi) = \det \begin{pmatrix} \sin\vartheta \cos\varphi & r\cos\vartheta\cos\varphi & -r\sin\vartheta\sin\varphi \\ \sin\vartheta\sin\varphi & r\cos\vartheta\sin\varphi & r\sin\vartheta\cos\varphi \\ \cos\vartheta & -r\sin\vartheta & 0 \end{pmatrix}.$$

- **Page 99.** The third line from the bottom should read: ... are differentiable at x (or in G) then ...
- **Page 101.** The fourth line from the top should read: ... Since $\lim_{\eta\to 0}\frac{\psi(\eta)}{\|\eta\|} = 0$ it follows that
- **Page 104.** Theorem 6.17 should read: Let $G \subset \mathbb{R}^n$ be an ...
- **Page 175.** Equation (9.37) should read:

$$\max_{x\in\bar{G}} u(x) = \max_{x\in\partial G} u(x).$$

- **Page 590.** The third line in the solution to Problem 3. should read: i.e. $(a_k)_{k\in\mathbb{N}} = (b_k)_{k\in\mathbb{N}}$...
- **Page 591.** The second line from the bottom should read: for all $q \geq 1$. Indeed (*) imples
- **Page 617.** The second line of the solution to Problem 5. should read:

$$\frac{\partial}{\partial x}\left(\frac{x^2(y-2)^2}{x^6+(y-2)^6}\right) = \frac{\frac{\partial}{\partial x}(x^2(y-2)^2)(x^6+(y-2)^6) - x^2(y-2)^2\frac{\partial}{\partial x}(x^6+(y-2)^6)}{(x^6+(y-2)^6)^2}$$

- **Page 617.** The fifth line from the bottom should read:

$$\frac{\partial}{\partial y}\left(\frac{x^2(y-2)^2}{x^6+(y-2)^6}\right) = \frac{\frac{\partial}{\partial y}(x^2(y-2)^2)(x^6+(y-2)^6) - x^2(y-2)^2\frac{\partial}{\partial y}(x^6+(y-2)^6)}{(x^6+(y-2)^6)^2}$$