ERRATA FOR *ADVANCED CALCULUS DEMYSTIFIED*

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Thanks to Bill White for encouraging me to write this errata sheet, and pointing out a few of the entries below.

p. xx, l yy = page xx, line yy. (If yy is negative then count lines up from the bottom of the page.)

"About the author," l 1. I'm an associate Professor now! Also the research paper count is off. Not sure what it is now. Check my web page.

p. 20, l 13-15. "We can evaluate... = 1." Remove these lines. Not sure why they are there.

p. 20, l -1. The fourth part of problem 14 should be

$$\lim_{(x,y)\to(0,0)} \frac{x^2y^2}{x^6+y^3}$$

p. 67, l -7,-8. In the statement of both parts of Problem 53 there is an extra comma toward the end of the line, after θ.

p. 89, l 10. In Example 7-19 it says "... spanned by the vectors $\langle 1,2\rangle$ and $\langle 4,3\rangle$." It should say "... spanned by the vectors $\langle 1,2\rangle$ and $\langle 3,4\rangle$."

p. 100, Figure. In the center of the figure there is the label $\Psi(t_{i+1})\ \ \Psi(t_i)$. There is a missing minus sign here. It should read $\Psi(t_{i+1}) - \Psi(t_i)$

p. 103, l -15. $\Delta t_i \to \infty$ should be $\Delta t_i \to 0$.

p. 112, l -5. The statement of Problem 88 should read "Derive a formula for the surface area of the graph of the spherical equation $\rho = f(\phi)$."

p. 118, l 8. Replace the word "cone" in the statement of Problem 93 with the word "paraboloid."

p. 137, l 2. There is an extra comma toward the end of the line, after t.

p. 140, l 7,11,-4. There are a lot of derivatives here that should be partial derivatives. Also, there are several u's that should be v's. Line 7 should read: "vectors $\frac{\partial\Psi}{\partial u}$ and $\frac{\partial\Psi}{\partial v}$ are both tangent to S. Hence, the vector $\frac{\partial\Psi}{\partial u} \times \frac{\partial\Psi}{\partial v}$ is perpen-". In the integral in line 11 it should be $\frac{\partial\Psi}{\partial u} \times \frac{\partial\Psi}{\partial v}$. And this should also appear at the end of line -4.

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p. 142, Problem 113. At the end of the problem statement there should be a line added: "Use the induced orientation." (Just like in Problem 112.)

p. 147, l -3,-2. This sentence just isn't right. Instead of "Then the force of gravity...", it should say: "Then the work you have to do to overcome gravity by going uphill at the point (x, y) is proportional to the vector $\nabla f(x, y)$"

p. 162, l -1. There is a missing minus sign in the second coordinate. It should read

$$\nabla \times \mathbf{W} = \langle -\cos z, -\sin z, 0\rangle$$

p. 163, l 1. Two mistakes in this line. It should read: "So, on the plane $z = 1$ we have $\nabla \times \mathbf{W} = \langle -\cos 1, -\sin 1, 0\rangle$."

p. 166, l 6. In the first sentence of Problem 132 it should read, "... centered at the origin with radius 0.1,"

p 168, l -5. The "$\times$" symbol at the beginning of the line should be a "$\cdot$" symbol.

p 168, l -4. Replace $\cos\phi$ with $\cos^2\phi$.

p. 170, l 2,3,4. The "$\times$" symbol should be a "$\cdot$" symbol in all three lines.

p. 184, l 5-8. The solution given to the fourth part of Problem 14 was not right, so I changed the problem statement (see correction on page 20 above). The correct solution for the new problem here should read:

Along the y-axis

$$\lim_{(x,y)\to(0,0)} \frac{x^2y^2}{x^6+y^3} = \lim_{(x,y)\to(0,0)} \frac{0}{y^3} = 0$$

Along the curve $y = x^2$

$$\lim_{(x,y)\to(0,0)} \frac{x^2y^2}{x^6+y^3} = \lim_{(x,y)\to(0,0)} \frac{x^6}{x^6+x^6} = \frac{1}{2}$$

p. 190, l -3, -2,-1. There are sign issues with the last three lines, and the answer isn't right. These last three lines should read:

$$\begin{aligned} &= -\cos\left(\frac{\pi}{2}+y\right) + \cos y\Big|_0^{\frac{\pi}{2}} \\ &= -\cos\pi + \cos\frac{\pi}{2} + \cos\frac{\pi}{2} - \cos 0 \\ &= 0 \end{aligned}$$

p. 197, l -5. The final answer to Problem 39 should be

$$\frac{1}{2}(\cos 6 - \cos 8 - \cos 5 + \cos 7).$$

p. 198, Solution to Problem 42. The third figure is not situated correctly. The two lobes should be oriented vertically, so that the surface is centered on the z-axis. This can be fixed by rotating the figure 90 degrees clockwise.

p. 199, l 3. Delete the word "negative"

p. 200, l -4. The answer for part 2 of Problem 49 should read:

$$\frac{\pi}{2} \leq \theta \leq \pi, \quad \frac{\pi}{2} \leq \phi \leq \pi$$

p. 202, l -5. Limits on z should be $0 \leq z \leq 4$.

p. 203, l -1. Answer should be $-\frac{9}{15} = -\frac{3}{5}$.

p. 207, l 3. It says "... we get imaginary answers." This is wrong! Plugging $y = -\frac{4}{3}$ into $x^2 + \frac{y^2}{4} = 1$ and solving for x gives $x = \pm\frac{\sqrt{5}}{3}$. So $\left(\pm\frac{\sqrt{5}}{3}, -\frac{4}{3}\right)$ are also critical points.

p. 207, l 9. The new critical points above have to also be checked:

$$f\left(\pm\frac{\sqrt{5}}{3}, -\frac{4}{3}\right) = \frac{5}{9} + \frac{16}{9} - \frac{8}{3} - 1 = -\frac{4}{3}$$

so -2 is still the minimum, as stated.

p. 208, l -1. The signs on the first two coordinates should be switched.

p. 210, l -5. Delete the line that says $\lambda = \frac{1\pm\sqrt{10}}{2}$. I have no idea why this is there.

p. 216, l 1. There should be a $\frac{1}{3}$ in front of t^3. The line should read:

$$\int\limits_C f(x, y)\, d\mathbf{s} = \int\limits_0^1 f\left(\frac{1}{3}t^3, t\right) |\langle t^2, 1\rangle|\; dt$$

p. 235, l -4. Missing minus sign. The determinant of the matrix should equal $\langle -y, x, 0\rangle$.

p. 235, l -1. The limits on θ are wrong. Should be $0 \leq \theta \leq \frac{\pi}{2}$.