Calculus Deconstructed

Known bugs as of date below

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p. 120: In statement of Prop. 3.6.1, $\exp_2\left(\frac{p}{q}\right) = \sqrt[q]{p}$ *should read* $\exp_2\left(\frac{p}{q}\right) = \sqrt[q]{2^p}$.

p. 81: In prob. 6b, $\frac{4}{(4n+1)\pi}$ *should read* $\frac{2}{(4n+1)\pi}$

p. 81: In prob. 6c, $\frac{4}{(4n+3)\pi}$ *should read* $\frac{2}{(4n+3)\pi}$

(*Note: this typo is also carried in the solution manual.*)

p. 81: In prob. 11, the angle-sum formula is given as

$$\cos(\theta_0 + t_n) = \cos\theta_0 \cos t_n - \sin\theta_0 \sin t_0.$$

The last subscript should read n, not 0.

p. 104: In statement of Thm. 3.4.4, "x_0 is an accumulation point..." *should read* "a is an accumulation point..."

p. 124: The reference to Exercise 7 in the first line of the proof of Remark 3.6.5 is in error (there is no exercise explicitly asking for proofs of the other properties of logarithms).

p. 117: The first two lines on p. 117, as well as the first display, *should read*

> ...while the denominator approaches zero: for x slightly *below* -1, x^2 is slightly *above* 1, so $f(x)$ is large *positive*, while for x slightly above -1, $f(x)$ is large *negative*. Thus
>
> $$\lim_{x\to -1^-} f(x) = +\infty, \qquad \lim_{x\to -1^+} f(x) = -\infty$$

p. 172: In the fourth display, both instances of $f(y_k)$ (second and third lines) *should read* $f(x_k)$.

p. 174: In the third display, $\arcsin x$ *should read* $\operatorname{arcsec} x$.

p. 176: Due to a macro mishap, subscripts and function names are interchanged in two places:

- in the third display, $T_g b(y)$ *should read* $T_b g(y)$
- in the fifth display, $T_h a(x)$ *should read* $T_a h(x)$.

p. 177: Similarly, the first display should read

$$T_a(g \circ f)(x) = T_a h(x) = T_b g\,(T_a f(x)) = ((T_b g) \circ (T_a f))\,(x)$$

p. 458: The correct answer to Problem 4.1.1(c) is -1, not $-\frac{3}{2}$.
(The latter is the correct answer to (d)).

p. 141: In the third and fourth displays, $6\triangle x + \triangle x^2$ *should read* $6\triangle x + 3\triangle x^2$.

p. 146: The next-to-last display needs a closing parenthesis.

p. 459: The correct answer to Problem 4.3.2a is $y = 2\ln 2 + (2 + 2\ln 2)(x - \ln 2)$.

p. 211: Line 13 from bottom: "relative maximum" *should read* "local maximum".

p. 211: Line 9 from bottom: "still assuming $f(x) > 0$" *should read* "still assuming $f'(x) > 0$"

p. 228: Line 13: the correct formulas for the derivatives are $t^{-2}f'\big(-\frac{1}{t}\big)$ and $t^{-2}g'\big(-\frac{1}{t}\big)$ (argument needs a minus).

p. 461: In the answer to Problem 4.7.5c, the minimized surface area with open top is achieved when $r = 10\sqrt[3]{2}$ and $h = 10\sqrt[3]{2}$ (not $h = 10$). The corresponding surface area is $S = 300\pi\sqrt[3]{4}$.

p. 211: The end of the first sentence (line 3):"$f(x_1) < f(x_2)$" *should read* "$f(x_1) < f(x_2)$ (*resp.* $f(x_1) > f(x_2)$)"

p. 214: Fifth line after Remark 4.8.6: *should read* "$f''(0) = 0$, but $f' \uparrow$ everywhere."

p. 298: Sixth display *should read*

$$\int (\sin x^2)(x\,dx) = \int (\sin\theta)(\frac{1}{2}\,d\theta) = -\frac{1}{2}\cos\theta + C = -\frac{1}{2}\cos x^2 + C.$$

p. 304: In Problem 2c, the last integral *should read* $\int e^{ax}\cos bx\,dx$.

p. 379: In the calculation of the third derivative of $\sqrt{x}$, there is a sign error which affects the following items:

- Third display *should read*
$$f^{(3)}(s) = \frac{3}{8s^{5/2}}$$
(that is, no minus)
- Fourth and fifth displays *should read*
$$\frac{3}{8 \cdot 9^5} \approx 6.35 \times 10^{-6}$$
and
$$\frac{3}{8 \cdot 8^5} \approx 1.14 \times 10^{-5}.$$

- Sixth and seventh displays *should read*

$$\frac{3}{8\cdot 9^5}\frac{(80-81)^3}{3!} = -\frac{1}{16\cdot 9^5} \approx -0.000001058 < -10^{-6}$$

and

$$\frac{3}{8\cdot 8^5}\frac{(80-81)^3}{3!} = -\frac{1}{2\cdot 8^6} \approx -0.000001907 > -2\times 10^{-6}.$$

- Text following this display:

  ...quantity between 10^{-6} and 2×10^{-6}; in particular, since it is positive, our calculation is an *under*estimate..

  should read

  ...quantity between -2×10^{-6} and -10^{-6}; in particular, since it is negative, our calculation is an *over*estimate..

p. 409: The fourth display *should read*

$$\rho(x) = \lim \frac{\left|3^{k+1}x^{k+1}/(k+2)^2\right|}{|3^k x^k/(k+1)^2|} = \lim\left[3\,|x|\,\frac{(k+1)^2}{(k+2)^2}\right] = 3\,|x|$$

p. 440: The last display (equation (6.14)) *should read*

$$\frac{1}{z} = \frac{\bar{z}}{|z|^2}.$$