**ERRATA** for "Elementary Analysis, 2nd edition," by Kenneth A. Ross
(revised March 2018)

Page 14. In line 6 of the first paragraph, "can proved solely" should be "can be proved solely".

Page 24, five lines from the bottom. "If fact" should be "In fact".

Page 40, line 3. The denominator of the first fraction should be the same as for the second fraction, namely $7(7n-4)$.

Page 68. Delete the first three-line paragraph of the proof.

Page 69. In the sentence after equation (5), equation (1) should be applied using $\epsilon = t - \max\{s_{n_{k-1}}, t - \frac{1}{k}\}$.

Page 69, line $-4$. Second sentence should read: Given $n_1 < \cdots < n_{k-1}$, select $n_k > n_{k-1}$ so that $s_{n_k} > \max\{s_{n_{k-1}}, k\}$.

Page 74, Lines 6-9 should read: The remaining cases are that $(s_n)$ is bounded above or is bounded below. These cases are similar, so we only consider the case that $(s_n)$ is bounded above. If $\limsup s_n = -\infty$, then the sequence $(s_n)$ is unbounded below and the result follows from Theorem 11.2(iii). Otherwise, $t = \limsup s_n$ is finite. Consider $\epsilon > 0$. There exists $N_0$ so that

Page 76, Lines 2-6 should read: Suppose $t$ is finite. Consider the interval $(t-\epsilon, t+\epsilon)$. Then some $t_N$ is in this interval. Let $\delta = \min\{t+\epsilon-t_N, t_N - t + \epsilon\}$, so that

$$(t_N - \delta, t_N + \delta) \subseteq (t - \epsilon, t + \epsilon).$$

Since $t_N$ is a subsequential limit, the set $\{n \in \mathbb{N} : s_n \in (t_N - \delta, t_N + \delta)\}$ is infinite, so the set $\{n \in \mathbb{N} : s_n \in (t - \epsilon, t + \epsilon)\}$ is also infinite. Thus, by Theorem 11.2(i), $t$ itself is a subsequential limit of $(s_n)$.

Page 102, Example 5, line 3. The word "Rest" should be "Test".

Page 110, last sentence prior to Section 16.1. Please change "some suggestions" to "some excellent suggestions".

Page 113, first displayed equation in the proof of Theorem 16.3. Capital L should be italicized $L$.

Page 116, line 6. The sum should be $\sum_{j=1}^{r} e_j \cdot 10^{r-j}$.

Page 129, line 12. The third fraction in the displayed equation is missing a parenthesis. It should be $\frac{f(x_0)}{g(x_0)}$.

Page 132, line 1. "in continuous" should be "is continuous".

Page 142, line 6. The numerator of the first fraction has an extra absolute value that should be removed, so that it reads $|y - x|(y + x)$.

Page 150, line 3 of the Proof of Theorem 19.6. $I$ should be $I^o$.

Page 159, line 3 of the statement of Theorem 20.6. First word should be capitalized: "Then".

Page 160. In line 4 of the statement of Corollary 20.8, "$0 < x < a + \delta$" should be "$a < x < a + \delta$."

Page 176. Replace the paragraph beginning on line 6 with the following. [This corrects an error in the book pointed out in March 2018 by Aleksey Zinger at Stony Brook University. He also kindly supplied the following proof.]

So we assume $I = \cup_{n=1}^{\infty}[a_n, b_n]$. Let $n_-, n_+ \in \mathbb{N}$ be such that $a = a_{n_-}$ and $b = b_{n_+}$. Let $E$ be the set of endpoints $a_n, b_n$ of all the intervals with $a$ and $b$ dropped from this set. By Discussion 13.7(iii) on page 87, the union of open intervals is open, so that

$$E = \mathbb{R} \setminus (-\infty, b_{n_-}) \setminus (a_{n_+}, \infty) \setminus \cup_{n=1}^{\infty}[a_n, b_n],$$

is closed in $\mathbb{R}$. It is also nonempty and countable. We will show that $E$ is perfect, i.e., every $x \in E$ is a limit of points in $E \setminus \{x\}$. This will be a contradiction by Discussion 21.10. Consider $x \in E$ and $h > 0$. If $x = a_n$ for some $n$, then $(x - h, x)$ must intersect $I = [a, b]$, so $(x - h, x)$ must intersect some interval $[a_k, b_k]$ and therefore $x' = b_k \in E \cap (x - h, x)$. Similarly, if $x = b_n$ for some $n$, then $(x, x+h)$ must intersect an interval $[a_m, b_m]$ and therefore $x' = a_m \in E \cap (x, x + h)$. In either case, we have found a point $x'$ in $E \cap (x - h, x + h)$ different from $x$. Since $h > 0$ is arbitrary, $x$ is a limit of points in $E \setminus \{x\}$. This shows $E$ is perfect, which is a contradiction, completing the proof.

Page 185. In Exercise 22.13, the word "graph" should be "image," i.e., the set $f([0, \infty))$.

Page 189, first line of Example 3 and first line of Example 4. Each sum should begin with 1: $\sum_{n=1}^{\infty}$.

Page 191, line 1. "On" should be "One."

Page 216, Exercise 26.8. $\sum_{n=0}^{\infty}(1)^n x^{2n}$ should be $\sum_{n=0}^{\infty}(-1)^n x^{2n}$.

Page 243, bottom line. Change the last sentence to: Now select $K$ and $M$ so that $L < K < M < L_1$.

Page 244, lines $-3$ and $-2$. Change to: Since $K < M$, there exists $\alpha_2 > a$ such that $\alpha_2 \le y < \alpha$ and

$$a < x < \alpha_2 \quad \text{implies} \quad \frac{f(x)}{g(x)} \le M < L_1.$$

Pages 248 and 391. The answer to Exercise 30.3(a) should be 1.

Page 261, line 11. "reach 9-place" should be "reached 9-place".

Page 263, line $-9$. In this displayed equation, $f'x_{n-1})$ should be $f'(x_{n-1})$.

Page 289. In line 2 of Exercise 33.3, $c_m$ should be $u_m$.

Page 294, line $-3$. The numerator of the first fraction should be $F(x) - F(x_0)$.

Page 340, line 4. "and $x > 0$" should be "and $x \geq 1$".

Page 355, line $-7$. "Then exists" should be "Then there exists".

Page 356, lines 12, 13, 14. On each line, $p$ should be $p_k$. For example, $p^{(n_k)}$ should be $p_k^{(n_k)}$.

Page 361, line $-6$. Middle denominator should be $b - x$, not $b - a$.

**Selected Hints and Answers**

Exercise 1.3, line 3. $(1 + 2 + \cdots n + (n+1))$ should be $(1 + 2 + \cdots n + (n+1))^2$.

Exercise 6.3(a), line 3. $t < r$ should be $t > r$.

Exercise 8.1(a), line 2. This line should read $|\frac{(-1)^n}{n} - 0| = \frac{1}{n} < \epsilon$.

Exercise 23.5(b), line 4. "Theorem 12.1" should be "Exercise 12.1".

Exercise 30.3(a). Answer should be 1.

Exercise 33.9. The fraction on line 1 should be $\frac{\epsilon}{4(b-a)}$, and the fractions $\frac{\epsilon}{2}$ on line 3 should be $\frac{\epsilon}{4}$.

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