The Induction Book–Errata

Proposition 1.2.2: The third line in the proof of the inductive step should read

$$= \frac{(ab)(ab)}{2ab\left((na-(n-1)b)\right) - ab\left((n-1)a-(n-2)b\right))}$$

Proposition 1.3.4: In the proof, the sentence "Subtracting ..." should read "Subtracting, we see $0 = b(q_1 - q_2) + (r_1 - r_2)$."

Theorem 1.5.1: In the proof, the sentence "If $r \neq 0$ then ..." and the following sentence should read "If $r \neq 0$ then by the inductive hypothesis r has a base b expansion $r = \sum_{i=0}^{\ell} d_i b^i$, and since $r < b^k$ we have that $\ell < k$. Then n has the base b expansion given by $j = k$, $c_k = q$, $c_i = 0$ for $\ell < i < k$, and $c_i = d_i$ for $0 \leq i \leq \ell$."

Problem 2.1.8 parts (a) and (b): $\prod_{k=1}^{n-1}$ should be $\prod_{k=0}^{n-1}$.

Problem 2.1.13: The inequality should be

$$\sum_{k=1}^{2^n} \frac{1}{k^a} \leq 1 + \frac{1 - 2^{n(1-a)}}{1 - 2^{1-a}}$$

Problems 2.1.17 and 2.1.18: To clarify, in Egyptian fraction decompositions the denominators must be distinct positive integers.

Problem 2.1.21: $a_1, \ldots, a_k$ should be $a_0, \ldots, a_k$ and $a_1 + \ldots + a_k$ should be $a_0 + \ldots + a_k$ throughout.

Problem 2.1.26: The answer to (a) is correct.
The answer to (b) should be: $a_n = (t+1)2^{n-1} - t$.
The answer to (c) is correct.
The answer to (d) should be: $a_n = (r+1)2^{n-1} - 1$.

Problem 2.4.3: for every $n \geq 0$ should be for every $n \geq 1$.

Problem 2.4.11: for every $n \geq 1$ and $m \geq 0$ should be for every $n \geq 0$ and $m \geq 1$.

Corollary 2.4.12: for every $n \geq 1$ should be for every $n \geq 0$ and $m \geq 1$.

Theorem 2.4.32(b): If $r_1 = r_2 = r$ should be If $r_1 = r_2 = r \neq 0$.