Hindawi Publishing Corporation
International Journal of Mathematics and Mathematical Sciences
Volume 2007, Article ID 29096, 3 pages
doi:10.1155/2007/29096

Erratum

Lower Bounds for Some Factorable Matrices

B. E. Rhoades and Pali Sen

Received 27 March 2007; Accepted 19 September 2007

The purpose of this erratum is to correct both the mathematical and typographical errors made in 2006.

The typos are as follows.

(i) Page 2, line 17, t_0 should read t_0^p.
(ii) Page 3, line 5, $j = r+2$ should read $j = r+1$.
(iii) Page 3, line 15, Δyr^p should read Δy_r^p.
(iv) Page 3, line 16 should read

$$g(r) - g(r+1) = (r+2)a_{r+1}^p \Delta y_r^p + (r+2)\Delta y_r^p \sum_{j=r+2}^{\infty} a_j^p. \tag{1.1}$$

(v) Page 4, line 7, $q < t < 1$ should read $r > 0$.
(vi) Page 4, line 11, $v(r)$ should read $u(r)$.
(vii) Page 6, line 17 $(t^{r+1}/(r+2))^p$ should read $(t^{r+1}/(r+2))^p \times$.
(viii) Page 6, line 18, $=$ should read $\times$.
(ix) Page 7, line 6, $-1p]$ should read $-1]$.
(x) Page 7, line 21 $(n+1)^{s-1}$ should read $(n+1)^{1-s}$.
(xi) Page 8, line 7, $q(p-1)$ should read $p(p-1)$.
(xii) Page 8, line 14, $(r+1)^{s-1} - (r+2)^{s-1}$ should read $(r+1)^{p-1} - (r+2)^{p-1}$.
(xiii) Page 8, line 16, $(j+1)^{(p-1)s}$ should read $(j+1)^{(s-1)p}$.
(xiv) Page 10, line 12, $\geq P_r(r+1)$ should read $\geq 1/(r+1)$.
(xv) Page 10, line 14, $(r+1)P_r^p$ should read $(r+1)$.

(xvi) Page 10, line 14, $P_{r+1}^{p}[$ should read $[$.
(xvii) Page 10, lines 15, 16, $P_{r+1}^{p}[$ should read P_r^p.
(xviii) Page 10, line 17, $p_{r+1}/P_r)$ should read $p_{r+1}/P_r)^p$.
(xix) Page 12, line 7, $+(r+2)^{\alpha}$ should read $+(r+2)^{2\alpha}$.

The mathematical errors occur showing that $\lim_r h(r) = 0$ in Theorems 6 and 7.

In Theorem 6, from the formula on line 2 of page 4,

$$\begin{aligned}
\lim_r h(r) &= \lim_r \frac{a_{r+1}^p \Delta y_r^p}{\Delta^2 y_r^p} \\
&= \lim_r \frac{[(r+1)^p - (r+2)^p]}{(r+2)^s[(r+1)^p - 2(r+2)^p + (r+3)^p]} \\
&= \lim_r \frac{(1/(r+2)^s)[1-((r+2)/(r+1))^p]}{(1-2((r+2)/(r+1))^p + ((r+3)/(r+2))^p)} \\
&= ((-s/(r+2)^{s+1})[1-((r+2)/(r+1))^p] \\
&\quad -(-p/(r+2)^s)((r+2)/(r+1))^{p-1}(-1/(r+1)^2)) \\
&\quad /(-2p((r+2)/(r+1))^{p-1}(-1/(r+1)^2) \\
&\quad + p((r+3)/(r+1))^{p-1}(-2/(r+1)^2)) \\
&= \lim_r ((-s(r+1)^2/2p(r+2)^{s+1})[1-((r+2)/(r+1))^p] \\
&\quad + (1/(r+2)^s)((r+2)/(r+1))^{p-1}) \\
&\quad /(((r+2)/(r+1))^{p-1} - ((r+3)/(r+1))^{p-1}) \\
&= \lim_r \frac{(-s(r+1)/2p(r+2)^{s+1})[(r+1)^p - (r+2)^p] + ((r+2)^{p-1}/(r+2)^s)}{(r+2)^{p-1} - (r+3)^{p-1}} \\
&= \lim_r \frac{(-s(r+1)/2p(r+2)^s)[((r+1)/(r+2))^p - 1] + 1/(r+2)^s}{1-((r+3)/(r+2))^{p-1}} \\
&= \lim_r (-s(r+2)^2/2p)((r+2-s(r+1))/(r+2)^{s+1})(((r+1)/(r+2))^p - 1) \\
&\quad - (s/2p(r+2)^{s-1})((r+1)/(r+2))^p - (s/(r+2)^{s-1}) \\
&\quad /(p-1)((r+3)/(r+2))^{p-2} = \lim_r A,
\end{aligned} \tag{1.2}$$

where

$$A = \frac{-s(r+2-s(r+1))}{2p(p-1)(r+2)^{s-1}}\left(\left(\frac{r+1}{r+2}\right)^p - 1\right). \tag{1.3}$$

If $s \geq 2$, then, clearly $\lim_r A = 0$. Suppose that $1 < s < 2$,

$$\begin{aligned}\lim_r A &= \lim_r \frac{(-s/2p(p-1))\left[((r+1)/(r+2))^p - 1\right]}{(r+2)^{s-1}/(r+2-s(r+1))} \\ &= \frac{(-s/2)((r+1)/(r+2))^{p-1}}{((r+2)^2(s-1)/(r+2-s(r+1))^2)\left[r+2-s(r+1)+r+2\right]} = 0.\end{aligned} \tag{1.4}$$

Thus g is monotone decreasing in r. The balance of the proof of [1, Theorem 6] is correct, and $L^p = f(\infty)$.

In Theorem 7,

$$h(r) = \frac{\left[(r+1)^p - (r+2)^p\right]}{(r+1)^p\left[(r+1)^p - 2(r+2)^p + (r+3)^p\right]}, \tag{1.5}$$

which is the same h as in Theorem 6, with s replaced by p. Therefore, $\lim_r h(r) = 0$. In the proof of Theorem 7, $g(0) \leq 0$, so $L^p = f(0)$.

B. E. Rhoades: Department of Mathematics, Indiana University, Bloomington, IN 47405-7106, USA
Email address: rhoades@indiana.edu

Pali Sen: Department of Mathematics and Statistics, University of North Florida, Jacksonville, FL 32224, USA
Email address: psen@unf.edu