*Publ. Math. Debrecen*
**86/1-2** (2015), 251–253
DOI: 10.5486/PMD.2015.7229

# Erratum to the paper "On the resolution of equations $Ax^n - By^n = C$ in integers $x$, $y$ and $n \geq 3$, II", Publ. Math. Debrecen 76/1–2 (2010), 227-250

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In Theorems 1, 2 and 3, some small solutions were missed out by accident from the published version of the paper. All of them can be obtained easily by using the computer packages PARI or MAGMA. For convenience, we give below the complete versions of the corresponding theorems.

**Theorem 1.** *If* $1 < B \leq 400$, *then all integer solutions* $(x, y, n)$ *of equation* (5) $|x^n - By^n| = 1$ *with* $|xy| > 1$, $\mathbf{n \geq 3}$ *and with* $(B, n) \notin \{(235, 23), (282, 23), (295, 29), (329, 23), (354, 29)\}$ *are given by*

***n=3***, $(B,x,y) = (7, \pm(2,1)), (9, \pm(2,1)), (17, \pm(18, 7)), (19, \pm(8, 3)), (20, \pm(19,7)), (26, \pm(3, 1)), (28, \pm(3, 1)), (37, \pm(10, 3)), (43, \pm(7, 2), (63, \pm(4, 1)), (65, \pm(4, 1)), (91, \pm(9, 2)), (124, \pm(5, 1)), (126, \pm(5, 1)), (182, \pm(17, 3)), (215, \pm(6, 1)), (217, \pm(6, 1)), (254, \pm(19, 3)), (342, \pm(7, 1)), (344, \pm(7, 1))$,

***n=4***, $(B, x, y) = (5, \pm 3, \pm 2), (15, \pm 2, \pm 1), (17, \pm 2, \pm 1), (39, \pm 5, \pm 2), (80, \pm 3, \pm 1), (82, \pm 3, \pm 1), (150, \pm 7, \pm 2), (255, \pm 4, \pm 1), (257, \pm 4, \pm 1)$,

***n=5***, $(B, x, y) = (31, \pm(2, 1)), (33, \pm(2, 1)), (242, \pm(3, 1)), (244, \pm(3, 1))$,

***n=6***, $(B, x, y) = (63, \pm 2, \pm 1), (65, \pm 2, \pm 1)$,

***n=7***, $(B, x, y) = (127, \pm(2, 1)), (129, \pm(2, 1))$,

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*Mathematics Subject Classification:* Primary: 11D45, 11D61; Secondary: 11D41, 11J82, 11J86.
*Key words and phrases:* Diophantine equations, binomial Thue equations, exponential equations, resolution of equations.

***n=8***, $(B,x,y) = (255,\pm 2,\pm 1), (257,\pm 2,\pm 1)$.

**Theorem 2.** (i) *If $400 < B < 800$ is odd, then all integer solutions $(x,y,n)$ of equation (5) $|x^n - By^n| = 1$ with $|xy| > 1$, $\mathbf{n \geq 3}$ and with the possible exceptions $(B,n)$ listed in Table 1 below are given by*

***n=3***, $(B,x,y) = (511,\pm(8,1)), (513,\pm(8,1)), (635,\pm(361,42)), (651,\pm(26,3))$,

***n=9***, $(B,x,y) = (511,\pm(2,1)), (513,\pm(2,1))$.

*Table 1*

| $(B,n)$ | $(B,n)$ | $(B,n)$ | $(B,n)$ | $(B,n)$ |
|---|---|---|---|---|
| $(413,29)$ | $(519,43)$ | $(649,29)$ | $(695,23)$ | $(757,379)$ |
| $(415,41)$ | $(535,53)$ | $(669,37)$ | $(699,29)$ | $(767,29)$ |
| $(417,23)$ | $(537,89)$ | $(681,113)$ | $(717,17)$ | $(789,131)$ |
| $(447,37)$ | $(573,19)$ | $(683,31)$ | $(721,17)$ | $(799,23)$ |
| $(501,83)$ | $(581,41)$ | $(685,17)$ | $(745,37)$ | |
| $(517,23)$ | $(611,23)$ | $(687,19)$ | $(749,53)$ | |

(ii) *Let $800 < B < 2000$ be odd. If $\mathbf{n < 13}$, then all integer solutions $(x,y,n)$ of equation (5) with $|xy| > 1$, $\mathbf{n \geq 3}$ are given by*

***n=3***, $(B,x,y) = (813,\pm(28,3)), (999,\pm(10,1)), (1001,\pm(10,1)), (1521,\pm(23,2)),$
$(1657,\pm(71,6)), (1727,\pm(12,1)), (1729,\pm(12,1)), (1801,\pm(73,6)), (1953,\pm(25,2)),$

***n=4***, $(B,x,y) = (915,\pm 11,\pm 2), (1295,\pm 6,\pm 1), (1297,\pm 6,\pm 1), (1785,\pm 13,\pm 2),$

***n=5***, $(B,x,y) = (1023,\pm(4,1)), (1025,\pm(4,1))$,

***n=10***, $(B,x,y) = (1023,\pm 2,\pm 1), (1025,\pm 2,\pm 1)$.

*If $\mathbf{n > 100}$ is a prime, then equation (5) has no solutions in integers $(x,y,n)$ with $|xy| > 1$ and with the possible exceptions $(B,n)$ listed in Table 2 below.*

*Table 2*

| $(B,n)$ | $(B,n)$ | $(B,n)$ |
|---|---|---|
| $(1041,173)$ | $(1509,251)$ | $(1795,179)$ |
| $(1077,179)$ | $(1527,127)$ | $(1821,101)$ |
| $(1135,113)$ | $(1589,113)$ | $(1841,131)$ |

| $(B,n)$ | $(B,n)$ | $(B,n)$ |
|---|---|---|
| $(1149,191)$ | $(1671,139)$ | $(1857,103)$ |
| $(1315,131)$ | $(1689,281)$ | $(1915,191)$ |
| $(1401,233)$ | $(1735,173)$ | $(1929,107)$ |
| $(1437,239)$ | $(1761,293)$ | $(1959,163)$ |

**Theorem 3.** *Under the assumptions* (2) $1 \le A < B, \gcd(A,B) = 1$ *and* $\max\{A,B\} \le 50$, *all integer solutions* $(x,y,n)$ *to equation* (4) $|Ax^n - By^n| = 1$ *with* $|xy| > 1$, $\mathbf{n \ge 3}$ *and with* $(A,B,n) \notin \{(21,38,17),(26,41,17),(22,43,17),(17,46,17),(31,46,17),(21,38,19)\}$ *are given by*

***n=3***, $(A,B,x,y) = (1,7,\pm(2,1)),(1,9,\pm(2,1)),(1,17,\pm(18,7)),(1,19,\pm(8,3)),$
$(1,20,\pm(19,7)),(1,26,\pm(3,1)),(1,28,\pm(3,1)),(1,37,\pm(10,3)),(1,43,\pm(7,2)),$
$(2,15,\pm(2,1)),(2,17,\pm(2,1)),(3,10,\pm(3,2)),(3,23,\pm(2,1)),(3,25,\pm(2,1)),$
$(3,47,\pm(5,2)),(4,31,\pm(2,1)),(4,33,\pm(2,1)),(5,13,\pm(11,8)),(5,17,\pm(3,2)),$
$(5,39,\pm(2,1)),(5,41,\pm(2,1)),(6,35,\pm(9,5)),(6,47,\pm(2,1)),(6,49,\pm(2,1)),$
$(8,17,\pm(9,7)),(8,19,\pm(4,3)),(8,37,\pm(5,3)),(11,19,\pm(6,5)),(11,37,\pm(3,2)),$
$(13,44,\pm(3,2)),(17,27,\pm(7,6)),(19,45,\pm(4,3)),(21,41,\pm(5,4)),$

***n=4***, $(A,B,x,y) = (1,5,\pm 3,\pm 2),(1,15,\pm 2,\pm 1),(1,17,\pm 2,\pm 1),(1,39,\pm 5,\pm 2),$
$(2,31,\pm 2,\pm 1),(2,33,\pm 2,\pm 1),(3,47,\pm 2,\pm 1),(3,49,\pm 2,\pm 1).$

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*(Received November 26, 2014)*