

Errata for the 33rd edition of *Standard Mathematical Tables and Formulae*

UPDATED: April 9, 2023

NOTES:

- The latest errata are here: http://www.mathtable.com/errata/smtf33_errata.pdf
- The home page for this book is <http://www.mathtable.com/smtf/>.
- Please send errata to ZwillingerBooks@gmail.com.
- We thank everyone who has contacted us about errors in this book!

ERRATA:

1 VECTOR OR CROSS-PRODUCT 2.3.7, page 81.

The first line now has

The vector, (or cross-) product) of

This is incorrect. It should have been

The vector, (or cross-) product of

(Thanks to Roger Nelsen for correcting this error.)

2 DEFINITIONS 4.1, page 147.

Item #22, for the *Hermitian conjugate*, currently has

$(A^H)_{kl} = u_{lk} - iv_{ik}$ which is incorrect. It should have been

$(A^H)_{kl} = u_{lk} - iv_{lk}$ That is $v_{ik} \rightarrow v_{lk}$.

(Thanks to Toshio Iguchi for correcting this error.)

3 Properties of Stirling cycle numbers 3.2.9.1-1, page 146.

The current

$\begin{bmatrix} n \\ k \end{bmatrix} = (n-1) \begin{bmatrix} n-1 \\ k \end{bmatrix} + n \begin{bmatrix} n-1 \\ k-1 \end{bmatrix}$ is incorrect. It should have been

$\begin{bmatrix} n \\ k \end{bmatrix} = (n-1) \begin{bmatrix} n-1 \\ k \end{bmatrix} + \begin{bmatrix} n-1 \\ k-1 \end{bmatrix}$

(Thanks to Alain Houde for correcting this error.)

4 QUADRILATERALS 4.7.2, page 217.

(a) The fourth line from the bottom now has

$$p = \sqrt{\frac{(ac + bd)(ab + cd)}{(ad + bc)}}$$

This is correct, but incomplete; it should have included the analogous expression for q :

$$p = \sqrt{\frac{(ac + bd)(ab + cd)}{(ad + bc)}}, \quad q = \sqrt{\frac{(ac + bd)(ad + bc)}{(ab + cd)}}$$

(b) The bottom line now has

$$pq = ac + bd \text{ (Ptolemy)}$$

This is correct, but incomplete; it should have included the extra expression:

$$pq = ac + bd \quad \text{and} \quad \frac{p}{q} = \frac{ab + cd}{ad + bc} \quad \text{(Ptolemy)}$$

(Thanks to Roger Nelsen for these improvements.)

5 COMMON LIMITS 5.1.10, page 282.

One of the limits is incorrect.

$$7. \quad \lim_{x \rightarrow 0} \frac{1 - \cos x}{x} = \frac{1}{2}$$

is incorrect, it should have been

$$7. \quad \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} = \frac{1}{2}$$

(Thanks to Andrew Melendrez Zerwekh for correcting this error.)

6 Example: paraboloid of revolution 4.22.2.3, page 274.

(a) The *Equation for principal directions* (#7) has a minus sign error in the unfactored term.

The first line now ends $+uv \, dv^2 = 0$ which is incorrect.

The corrected term is $-uv \, dv^2 = 0$

(b) The *Lines of curvature* (#8) has two errors:

- $u \, dv + v \, dv = 0$ should be $u \, du + v \, dv = 0$
- $v \, du - v \, du = 0$ should be $v \, du - u \, dv = 0$

(Thanks to Dan Martin for correcting these errors.)

7 APPLICATIONS OF INTEGRATION 5.3.3, page 294.

Currently, in section 2 (c), there is

$$\int_{r_1}^{r_2} \sqrt{1 + r^2 \left(\frac{dr}{d\theta}\right)^2} dr$$

whic is incorrect, it should have been

$$\int_{r_1}^{r_2} \sqrt{1 + r^2 \left(\frac{d\theta}{dr}\right)^2} dr$$

(Thanks to Martin Naumer for correcting this error.)

8 TABLE OF DEFINITE INTEGRALS 5.5, page 343.

Currently, the second (reformulated) integral in #596 is missing the dx term.

(Thanks to Toshio Iguchi for correcting this error.)

9 SIGNIFICANT MATHEMATICAL EQUATIONS 5.14, page 417.

The Einstein equation now has the term

$$\frac{8\pi G}{\pi^4} T_{\mu\nu}$$

which is incorrect, it should have been

$$\frac{8\pi G}{c^4} T_{\mu\nu}$$

10 SUMS OF CIRCULAR FUNCTIONS 6.5.13, page 431.

Line 4 currently has $\sin \alpha \pm \beta$ and $\sin \beta \pm \alpha$

These should have been written as $\sin(\alpha \pm \beta)$ and $\sin(\beta \pm \alpha)$

(Thanks to Roger Nelsen for these clarifications.)

11 RATIONAL TRIGONOMETRY 6.5.15, page 432.

Equation (6.5.6) now ends with $+Q_{12}^2$ which is incorrect.

The correct term is $+Q_{13}^2$

(Thanks to Alain Houde for correcting this error.)

12 GUDERMANNIAN FUNCTION 6.12, page 449.

The figure at the top of this page has the x axis label combined with the first line of text. Hence, “hyperbolic x function” should have been “hyperbolic function”

(Thanks to Dan Martin for correcting this error.)

13 PERCENTAGE POINTS, STUDENT'S *t*-DISTRIBUTION 7.17.3, page 631.

The example gives the value 0.325 in two places, that value should have been 0.289.

(Thanks to Emanuele Cosulich and Howard Edinger for independently correcting this error.)

14 QUANTUM MECHANICS 9.24, page 717.

The expression $E = \hbar f$ is incorrect (note that this has an “h-bar”).

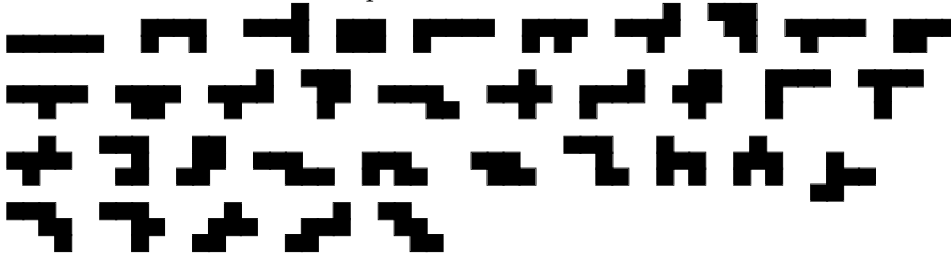
The expression should have been $E = hf$.

(Thanks to Robert Whiting for correcting this error.)

Addendum to SMTF 33

Addendum to section 10.20.2 Polyominoes

For $N = 6$ the 35 distinct shapes are:



Addendum to section 10.24 Voting Power

Following are the Shapley–Shubik power index (ϕ) and the Banzhaf power index (β) for small games.

Game	ϕ	β
(3; 2, 1, 1, 1)	(3, 1, 1, 1)/6	(3, 1, 1, 1)/6
(3; 2, 1, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(3; 2, 2, 1)	(1, 1, 1)/3	(1, 1, 1)/3

Game	ϕ	β
(4; 2, 1, 1, 1, 1)	(5, 2, 2, 2, 2, 2)/15	(5, 2, 2, 2, 2, 2)/15
(4; 2, 1, 1, 1, 1)	(8, 3, 3, 3, 3)/20	(5, 2, 2, 2, 2)/13
(4; 2, 1, 1, 1)	(3, 1, 1, 1)/6	(2, 1, 1, 1)/5
(4; 2, 1, 1)	(1, 1, 1)/3	(1, 1, 1)/3
(4; 2, 2, 1, 1, 1)	(9, 9, 4, 4, 4)/30	(2, 2, 1, 1, 1)/7
(4; 2, 2, 1, 1)	(2, 2, 1, 1)/6	(2, 2, 1, 1)/6
(4; 2, 2, 1)	(1, 1, 0)/2	(1, 1, 0)/2
(4; 2, 2, 2, 1)	(1, 1, 1, 0)/3	(1, 1, 1, 0)/3
(4; 2, 2, 2)	(1, 1, 1)/3	(1, 1, 1)/3
(4; 3, 1, 1, 1, 1)	(6, 1, 1, 1, 1)/10	(7, 1, 1, 1, 1)/11
(4; 3, 1, 1, 1)	(9, 1, 1, 1)/12	(7, 1, 1, 1)/10
(4; 3, 1, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(4; 3, 2, 1, 1)	(3, 1, 1, 1)/6	(3, 1, 1, 1)/6
(4; 3, 2, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(4; 3, 2, 2)	(1, 1, 1)/3	(1, 1, 1)/3
(4; 3, 3, 1)	(1, 1, 1)/3	(1, 1, 1)/3

Game	ϕ	β
(5; 2, 1, 1, 1, 1, 1)	(5, 2, 2, 2, 2, 2)/15	(15, 7, 7, 7, 7, 7)/50
(5; 2, 1, 1, 1, 1)	(8, 3, 3, 3, 3)/20	(5, 3, 3, 3, 3)/17
(5; 2, 1, 1, 1)	(1, 1, 1, 1)/4	(1, 1, 1, 1)/4
(5; 2, 2, 1, 1, 1, 1)	(16, 16, 7, 7, 7, 7)/60	(15, 15, 7, 7, 7, 7)/58
(5; 2, 2, 1, 1, 1)	(9, 9, 4, 4, 4)/30	(7, 7, 3, 3, 3)/23
(5; 2, 2, 1, 1)	(5, 5, 1, 1)/12	(3, 3, 1, 1)/8
(5; 2, 2, 1)	(1, 1, 1)/3	(1, 1, 1)/3
(5; 2, 2, 2, 1, 1, 1)	(7, 7, 7, 3, 3, 3)/30	(7, 7, 7, 3, 3, 3)/30
(5; 2, 2, 2, 1, 1)	(8, 8, 8, 3, 3)/30	(7, 7, 7, 3, 3)/27
(5; 2, 2, 2, 1)	(1, 1, 1, 1)/4	(1, 1, 1, 1)/4
(5; 2, 2, 2, 2, 1)	(1, 1, 1, 1, 1)/5	(1, 1, 1, 1, 1)/5
(5; 2, 2, 2, 2)	(1, 1, 1, 1)/4	(1, 1, 1, 1)/4
(5; 2, 2, 2)	(1, 1, 1)/3	(1, 1, 1)/3

Game	ϕ	β
(5; 3, 1, 1, 1, 1, 1)	(5, 1, 1, 1, 1, 1)/10	(5, 1, 1, 1, 1, 1)/10
(5; 3, 1, 1, 1, 1)	(6, 1, 1, 1, 1)/10	(11, 3, 3, 3, 3)/23
(5; 3, 1, 1, 1)	(3, 1, 1, 1)/6	(2, 1, 1, 1)/5
(5; 3, 1, 1)	(1, 1, 1)/3	(1, 1, 1)/3
(5; 3, 2, 1, 1, 1, 1)	(4, 2, 1, 1, 1, 1)/10	(11, 5, 3, 3, 3, 3)/28
(5; 3, 2, 1, 1, 1)	(27, 12, 7, 7, 7)/60	(11, 5, 3, 3, 3)/25
(5; 3, 2, 1, 1)	(7, 3, 1, 1)/12	(5, 3, 1, 1)/10
(5; 3, 2, 1)	(1, 1, 0)/2	(1, 1, 0)/2
(5; 3, 2, 2, 1, 1)	(12, 7, 7, 2, 2)/30	(5, 3, 3, 1, 1)/13
(5; 3, 2, 2, 1)	(5, 3, 3, 1)/12	(5, 3, 3, 1)/12
(5; 3, 2, 2, 2)	(3, 1, 1, 1)/6	(3, 1, 1, 1)/6
(5; 3, 2, 2)	(4, 1, 1)/6	(4, 1, 1)/6
(5; 3, 3, 1, 1, 1)	(9, 9, 4, 4, 4)/30	(2, 2, 1, 1, 1)/7
(5; 3, 3, 1, 1)	(2, 2, 1, 1)/6	(2, 2, 1, 1)/6
(5; 3, 3, 1)	(1, 1, 0)/2	(1, 1, 0)/2
(5; 3, 3, 2, 1)	(1, 1, 1, 0)/3	(1, 1, 1, 0)/3
(5; 3, 3, 2)	(1, 1, 1)/3	(1, 1, 1)/3
(5; 3, 3, 3)	(1, 1, 1)/3	(1, 1, 1)/3

Game	ϕ	β
(5; 4, 1, 1, 1, 1, 1, 1)	(10, 1, 1, 1, 1, 1, 1)/15	(15, 1, 1, 1, 1, 1, 1)/20
(5; 4, 1, 1, 1, 1, 1)	(16, 1, 1, 1, 1, 1)/20	(15, 1, 1, 1, 1, 1)/19
(5; 4, 1, 1, 1, 1)	(9, 1, 1, 1, 1)/12	(7, 1, 1, 1, 1)/10
(5; 4, 1, 1, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(5; 4, 2, 1, 1, 1, 1)	(6, 1, 1, 1, 1, 1)/10	(7, 1, 1, 1, 1, 1)/11
(5; 4, 2, 1, 1, 1)	(9, 1, 1, 1, 1)/12	(7, 1, 1, 1, 1)/10
(5; 4, 2, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(5; 4, 2, 2, 1)	(3, 1, 1, 1)/6	(3, 1, 1, 1)/6
(5; 4, 2, 2)	(4, 1, 1)/6	(3, 1, 1)/5
(5; 4, 3, 1, 1)	(3, 1, 1, 1, 1)/6	(3, 1, 1, 1, 1)/6
(5; 4, 3, 1)	(4, 1, 1)/6	(3, 1, 1)/5
(5; 4, 3, 2)	(1, 1, 1)/3	(1, 1, 1)/3
(5; 4, 4, 1)	(1, 1, 1)/3	(1, 1, 1)/3