Corrections to
Mathematics via Problems
Part 2 Geometry
edited by A.Zaslavsky and M. Skopenkov

Updated version of these corrections:
`http://users.mccme.ru/mskopenkov/skopenkov-pdf/mbl26-erratum.pdf`

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page	paragraph	printed text	corrected text
throughout	throughout	height	altitude
2	before §1		• An *escribed circle* (also called "excircle") is a circle tangent to a side of the triangle and the extensions of two other sides.
3	1.1.4	(see Problem 2.4.1)	(see Section 4 "The radical axis" in Chapter 10)
7	1.3.7(a)	Use Problem 1.3.3	Use Problem 1.3.4
9	1.4.10	exscribed	escribed
10	1.4.6(b)	follows from part (a) and from Problem 1.4.3	follows from Problem 1.4.3
11	1.4.11(a)	defines a line	defines a line (one can show this using Cartesian or barycentric coordinates)
21	1.8.13(b)	inscribed	escribed
21	1.8.1	are concurrent	have a common point
22	1.8.3	$(90^\circ + \angle C/2)$	$(90^\circ + \angle C/2) - 90^\circ$
22	1.8.4	triangles TLK	triangles TKL
22	Footnote 5	tangency points of its excircles	tangency points of its excircles with the sides
23	1.8.8	$KT\|^2/LT\|^2$	$\|KT\|^2/\|LT\|^2$
27	Note	The condition of the theorem can also be described [...] then PMT is similar to CAB_1.	The theorem can be restated as follows: Let ABC and MNP be two triangles, and T any point in the plane. Let A_1, B_1, C_1 be three points in the plane such that $\triangle ABC_1 \sim \triangle NMT$ and $\triangle BCA_1 \sim \triangle PNT$ and $\triangle CAB_1 \sim \triangle MPT$. Here, the symbol "$\sim$" means "directly similar" (i.e., similar and having the same orientation), and we understand a triangle to be an ordered triple of its vertices (so $\triangle ABC$ is not similar to $\triangle BAC$). Then, $\triangle A_1B_1C_1 \sim \triangle MNP$.
27	Note	This theorem, in somewhat weakened form [...] was proposed [...] in the journal *Mathematics in School*	The generalized Napoleon theorem goes back to the paper J. F. Rigby, *Napoleon Revisited*, Journal of Geometry **33** (1988), pp. 129–146, where it appears as Theorem 3.1. In a somewhat weakened form, it was proposed by I.F. Sharygin in the early 1990s in the journal *Mathematics in School* and recently reproved elementarily in Khakimboy Egamberganov, *A Generalization of the Napoleon's Theorem*, Mathematical Reflections **3** (2017).
41	2.1.4	$MNEF$	$MNFE$
47	2.3.5	tangential	cyclic
47	2.3.7	tangential	tangential[1]
48	2.4.8	assuming that	in the case when
51	2.6.12	**2.6.12.**	**2.6.12.***
51	after 2.6.12		In what follows, it is allowed to use Casey's theorem (Problems 2.6.12 and 2.6.13) without proof.

53	2.6.12	with a routine proof	with a non-elementary proof
53	2.6.12	these circles coincide	δ' and δ coincide. However, the proof of the existence of the desired circle δ' is non-elementary.
52	2.6.3	point W	point $W \neq A$
55	section title	transformations	isometries
55	before 3.1.1	transformation (about O)	transformation (of the plane or space)
55	before 3.1.1	transformation mapping	transformation (of the plane or space) mapping
61	before 3.1.14	arc BC not containing B	arc BC not containing A
62	3.2.2	A *motion*	Prove that an isometry
73	3.5.11	right	equilateral
74	3.5.3	maps PP'	maps segment PP'
76	3.5.12	no longer lies	lies
78	3.7.5	and intersects	and
89	4.1.1(b)	$\overrightarrow{XA_n} + \overrightarrow{XO}$	$\overrightarrow{OA_n} + \overrightarrow{XO}$
89	4.1.2	subtract	add
90	before 4.2.1	Here it is understood [...] otherwise	Here for two parallel vectors $\vec{u}$ and $\vec{v} \neq \vec{0}$ we denote by $\frac{\vec{u}}{\vec{v}}$ the number k such that $\vec{u} = k\vec{v}$.
90	4.2.4	intersect O	contain O
95	4.3.10	circumscribes	is circumscribed about
95	4.3.10	inscribes	is inscribed into
98	4.3.14	By Problem 4.3.9	By Problem 4.3.8
102	before 5.2.1	preserving generalized circles	that is a similarity or a composition of an inversion and a motion
102	before 5.2.1	Any Möbius transformation [...] and a motion	One can show that those are all maps preserving generalized circles but we are not going to use it.
102	5.2.2	$(a\overline{z} + b/(c\overline{z} + d)$	$(a\overline{z} + b)/(c\overline{z} + d)$
102	5.2.5	maps ABC to	maps A, B, C to vertices of
112	6.2.10(b),(c)	Find	Construct
112	6.2.11	Find the locus of all points	Construct a point
112	6.2.12(a)	Find points	Find the locus of all points
133	before 7.3.15		(e) Find all rotational symmetries (see the definition in Section 3 "Classification of isometries of space" in Chapter 3) that transform a given cube into itself. (f) The same for a regular tetrahedron. (g) The same for a regular octahedron.
136	7.4.11	semi-regular bodies, such as truncated octahedra	truncated octahedra
139	before 7.4.31	$\Gamma(z) = \int\limits_0^\infty y^z e^{-y} dy$	$\Gamma(z) = \int\limits_0^\infty y^{z-1} e^{-y} dy$
139	before 7.4.31	$\Gamma(k) = (k+1)!$ for an integer k and $\Gamma(z) = \Gamma(z-1)z$	$\Gamma(k) = (k-1)!$ for an integer $k > 0$ and $\Gamma(z+1) = z\Gamma(z)$
139	before 7.4.31	$\Gamma(x)\Gamma(1-x) = \pi/\sin(\pi z)$	$\Gamma(z)\Gamma(1-z) = \pi/\sin(\pi z)$
139	before 7.4.31	$\Gamma(1/2) = \sqrt{\pi}/2$	$\Gamma(1/2) = \sqrt{\pi}$
139	7.4.31	**7.4.31.**	**7.4.31.** (Challenge)
146	8.1.12	construct	erect
149	8.1.9	$+ + ab$	$+ab$
149	8.1.10	The resulting figure (with the glued segments attached)	Formally, take the quadrilateral with greater area and attach the segments of the same circle (dark-filled in Fig. 4) to its sides. The resulting figure
153	8.2.8	By Varignon's theorem	By a similar computation (called Varignon's theorem)
154	before 8.2.10	$S_{\triangle BCD} = \frac{1}{2} S_{\triangle BCE}$	$S_{\triangle BCE} = \frac{1}{2} S_{\triangle BCD}$

161	before 8.3.2(b)		*Note.* This argument shows that $\|F_1Z\| + \|F_2Z\|$ increases as a point Z moves along the ray F_1X; hence the intersection point Y indeed exists.
166	before §4	the boundary of the figure α_1	the curve α_1
167	8.4.8	three bisectors	there exist three bisectors
167	8.4.8	intersect at one point	that have two common points