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Notation and Abbreviations

A.1 Notation

We assume familiarity with standard elementary notation of set theory, algebra, logic, geometry (including vectors), analysis, number theory (including divisibility and congruences), and combinatorics. We use this notation liberally.

We assume familiarity with the basic elements of the game of chess (the movement of pieces and the coloring of the board).

The following is notation that deserves additional clarification.

- $\mathcal{B}(A, B, C)$, $A - B - C$: indicates the relation of *betweenness*, i.e., that B is between A and C (this automatically means that A, B, C are different collinear points).
- $A = l_1 \cap l_2$: indicates that A is the intersection point of the lines l_1 and l_2 .
- AB : line through A and B , segment AB , length of segment AB (depending on context).
- $[AB$: ray starting in A and containing B .
- $(AB$: ray starting in A and containing B , but without the point A .
- (AB) : open interval AB , set of points between A and B .
- $[AB]$: closed interval AB , segment AB , $(AB) \cup \{A, B\}$.
- $(AB]$: semiopen interval AB , closed at B and open at A , $(AB) \cup \{B\}$.
The same bracket notation is applied to real numbers, e.g., $[a, b) = \{x \mid a \leq x < b\}$.
- ABC : plane determined by points A, B, C , triangle ABC ($\triangle ABC$) (depending on context).
- $[AB, C$: half-plane consisting of line AB and all points in the plane on the same side of AB as C .

- (AB, C) : $[AB, C$ without the line AB .
- $\langle \vec{a}, \vec{b} \rangle, \vec{a} \cdot \vec{b}$: scalar product of \vec{a} and \vec{b} .
- $a, b, c, \alpha, \beta, \gamma$: the respective sides and angles of triangle ABC (unless otherwise indicated).
- $k(O, r)$: circle k with center O and radius r .
- $d(A, p)$: distance from point A to line p .
- $S_{A_1A_2\dots A_n}$: area of n -gon $A_1A_2\dots A_n$ (special case for $n = 3$, S_{ABC} : area of $\triangle ABC$).
- $\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \mathbb{C}$: the sets of natural, integer, rational, real, complex numbers (respectively).
- \mathbb{Z}_n : the ring of residues modulo n , $n \in \mathbb{N}$.
- \mathbb{Z}_p : the field of residues modulo p , p being prime.
- $\mathbb{Z}[x], \mathbb{R}[x]$: the rings of polynomials in x with integer and real coefficients respectively.
- R^* : the set of nonzero elements of a ring R .
- $R[\alpha], R(\alpha)$, where α is a root of a quadratic polynomial in $R[x]$: $\{a + b\alpha \mid a, b \in R\}$.
- X_0 : $X \cup \{0\}$ for X such that $0 \notin X$.
- $X^+, X^-, aX + b, aX + bY$: $\{x \mid x \in X, x > 0\}$, $\{x \mid x \in X, x < 0\}$, $\{ax + b \mid x \in X\}$, $\{ax + by \mid x \in X, y \in Y\}$ (respectively) for $X, Y \subseteq \mathbb{R}$, $a, b \in \mathbb{R}$.
- $[x], \lfloor x \rfloor$: the greatest integer smaller than or equal to x .
- $\lceil x \rceil$: the smallest integer greater than or equal to x .

The following is notation simultaneously used in different concepts (depending on context).

- $|AB|, |x|, |S|$: the distance between two points AB , the absolute value of the number x , the number of elements of the set S (respectively).
- $(x, y), (m, n), (a, b)$: (ordered) pair x and y , the greatest common divisor of integers m and n , the open interval between real numbers a and b (respectively).

A.2 Abbreviations

We tried to avoid using nonstandard notations and abbreviations as much as possible. However, one nonstandard abbreviation stood out as particularly convenient:

- w.l.o.g.: without loss of generality.

Other abbreviations include:

- RHS: right-hand side (of a given equation).
- LHS: left-hand side (of a given equation).
- QM, AM, GM, HM: the quadratic mean, the arithmetic mean, the geometric mean, the harmonic mean (respectively).
- gcd, lcm: greatest common divisor, least common multiple (respectively).
- i.e.: in other words.
- e.g.: for example.

B

Codes of the Countries of Origin

ARG	Argentina	GRE	Greece	PHI	Philippines
ARM	Armenia	HKG	Hong Kong	POL	Poland
AUS	Australia	HUN	Hungary	POR	Portugal
AUT	Austria	ICE	Iceland	PRK	Korea, North
BEL	Belgium	INA	Indonesia	PUR	Puerto Rico
BLR	Belarus	IND	India	ROM	Romania
BRA	Brazil	IRE	Ireland	RUS	Russia
BUL	Bulgaria	IRN	Iran	SAF	South Africa
CAN	Canada	ISR	Israel	SIN	Singapore
CHN	China	ITA	Italy	SLO	Slovenia
COL	Colombia	JAP	Japan	SMN	Serbia and Montenegro
CUB	Cuba	KAZ	Kazakhstan	SPA	Spain
CYP	Cyprus	KOR	Korea, South	SWE	Sweden
CZE	Czech Republic	KUW	Kuwait	THA	Thailand
CZS	Czechoslovakia	LAT	Latvia	TUN	Tunisia
EST	Estonia	LIT	Lithuania	TUR	Turkey
FIN	Finland	LUX	Luxembourg	TWN	Taiwan
FRA	France	MCD	Macedonia	UKR	Ukraine
FRG	Germany, FR	MEX	Mexico	USA	United States
GBR	United Kingdom	MON	Mongolia	USS	Soviet Union
GDR	Germany, DR	MOR	Morocco	UZB	Uzbekistan
GEO	Georgia	NET	Netherlands	VIE	Vietnam
GER	Germany	NOR	Norway	YUG	Yugoslavia
		NZL	New Zealand		

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