

# **Rules of the International Student Team Online Competition in Mathematics**

## **ISTOCiM 2020**

### **§ 1**

#### **General**

1. The organizer of the International Student Team Online Competition in Mathematics (ISTOCiM) – hereinafter referred to as the Competition – is Faculty of Science and Technology of the University of Silesia in Katowice and Uppersilesian Branch of the Polish Mathematical Society - hereinafter referred to as the Organisers. The Competition is an online version of the International Student Team Competition in Mathematics (ISTCiM), which cannot be held due to epidemic restrictions.
2. The Competition will take place from 13th to 15th of November 2020
3. The Competition will be held in the form of teleconference on the ZOOM platform.
4. The Competition is open to all students at every stage of studies (bachelor, masters and postgraduate) who are interested in mathematics.
5. The Competition consists of the team part only.
6. The official language of the Competition is English. Solutions must be written in English. Solutions written in another language will not be accepted.

### **§ 2**

#### **Objectives of the competition**

1. The goal of the competition is:
  - a) maintaining a keen interest in mathematics;
  - b) encouraging the development of all mathematically talented pupils from all participating higher education institutions and relevant countries;
  - c) supporting friendly relations between higher education students and teachers of participating institutions;
  - d) promoting online collaboration between students and developing interpersonal skills in solving mathematical problems.

### § 3

#### **Participants**

1. The Competition is addressed to every student at any stage of the studies (undergraduate, graduate and postgraduate studies up to the third year), interested in mathematics.
2. Student teams up to five members are accepted. Team members, hereinafter referred to as Competitors, do not have to be from the same higher education institution or country. Each team should nominate one of its members as the Captain and it should be accompanied by the Team Leader, who guarantees the independence of solutions and compliance with the regulations and becomes a member of the Ordinary Jury.
3. There are no further restrictions on the number of participants and teams from any university or other higher education institution.
4. During the Competition, Competitors work online in the form of teleconferences in their own Teams and cannot contact anyone other than the Competitors and their Team Leader.
5. Only Team Leaders and Captains, referred to in p. 2, are authorized to talk with the Jury.

### § 4

#### **Registration for the Competition**

1. Registrations for the Competition take place electronically, via the Competition website, at <http://www.istcim.math.us.edu.pl>.
2. Registrations will be open until November 8th, 2020. After the confirmation of the registration, the Team will receive by e-mail to the Team's e-mail address (given in the application) technical information concerning the participation in the Competition (link to the connection etc.).
3. The condition for being accepted is to provide the name, surname and university name of each member of the Team and agree to the processing of the aforementioned personal data for the purpose of conducting the competition and announcing the results of the competition on the website referred to in p. 1.
4. The content of the GDPR Information Clause for the Participant and for the Team Leader with the model statement constitutes [Appendix no.1](#) to these Rules.

## § 5

### Course of the Competition

1. The Competition will take place from November 13th to November 15th 2020.
2. The Team Competition will be held on Friday November 13th from 2 p.m. to 6 p.m.; on Saturday November 14th the Jury will meet; on Sunday November 15th at 10 a.m. the final results will be announced and there will be a presentation of selected best solutions presented by their authors. The entire event will be conducted using ZOOM platform.
3. On Friday at 1:45 p.m. the participants will be welcomed and the rules of the Competition explained. Afterwards:
  - a) participants will be divided into separate groups, the so-called Breakout Rooms, corresponding to their Teams. The Teams will be accompanied by randomly assigned Assistant of the Jury;
  - b) at 2 p.m., the Teams will receive 10 problems via Assistant of the Jury (cf. § 7 of the Rules);
  - c) during the course of the Competition, the Participants undertake to keep the audio and video channels open, also accessible to the Assistant of the Jury;
  - d) Participants provide solutions of problems in electronic form (preferred PDF file or JPG image, etc.) to Assistant of the Jury at any time before the end of the Competition at 6 p.m.;
  - e) The Assistant to the Jury, after making sure that all the solutions have been provided and Participants do not raise any additional doubts, ends the session of the Team meeting;
  - f) At 6:15 p.m., the last announcements will be made on the main channel of the call, after which the Competition will be stopped on that day.
4. On Saturday, from 9 a.m. to 6 p.m., the Jury meets (detailed hours may be set by the Jury members at their discretion). After the session, the preliminary results of the Competition will be made publicly available on the Competition website: <http://www.istcim.math.us.edu.pl>. The proposed choice of the best solutions will be communicated to their authors.
5. On Sunday from 9 a.m. to 9:45 a.m. the Teams can raise objections to scores for tasks. At 9:45 a.m. a meeting of the Jury will be held to vote the final results and the list of solutions to be presented during the award ceremony.
6. Also on Sunday at 10 a.m. the closing ceremony of the Competition will take place, including the announcement of the list of winners and presentation of selected best solutions presented by their authors.
7. Both registration and transmission of the course of the Competition is forbidden at any stage of the Competition.

## § 6

### Jury

1. The Competition is supervised by the Jury, which is the highest authority of the Competition. The Jury consists of the Chairman, the Permanent Jury and the Ordinary Jury. The Assistants of the Jury, selected from among students of the Faculty of Science and Technology of the University of Silesia in Katowice, help in the work of the Jury and in controlling the course of the Competition.
2. The Chairman of the Jury is a member of the academic staff of the University of Silesia in Katowice, approved by the Dean of the Faculty of Sciences and Technology. Permanent Members of the Jury are appointed by the Chairman of the Jury. Each Permanent Member of the Jury may resign from membership at any time.
3. The decisions of the Jury are taken by a simple majority.
4. The final results of the Competition are approved by a vote of the Permanent Members of the Jury.
5. The Chairman always has a decisive vote.

## § 7

### Problems

1. Problems for the Competition are selected from the following areas of mathematics:
  - g) mathematical analysis (with topology and set theory);
  - h) functional equations (including differential equations);
  - i) algebra and combinatorics;
  - j) geometry and linear algebra;
  - k) measure theory and probability theory.
2. The Competition consists in solving ten problems within four hours.
3. The Problems are selected before the Competition by the Permanent Jury from among the problems proposed by themselves and from those sent by any interested person (please use the class [istcim.cls](#); an example: [istcim\\_example.tex](#)).
4. Solutions are evaluated in the following scale: 0, 2, 4, 5 points, where:
  - a) 5 points are awarded for a complete solution (even with minor errors);
  - b) 4 points are awarded for an almost correct solution, which, however, has more serious defects (for instance: error in the final calculations, lack of statements of suitable claims and theorems or verification of their assumptions, etc.);
  - c) 2 points are awarded for solutions that are not complete but contain the main step towards the right solution;
  - d) 0 points are awarded to every other solution, even partial.

5. Solutions that merely cite statements, lemmas or theorems from the scientific literature will not be accepted. The Competition is not a contest of encyclopaedic knowledge, its aim is to test one's own ability to solve mathematical problems and present full reasoning.
6. Final result of each team is the total sum of points for solving all ten problems, regardless of which team member is the author of the solution. In the case of a tie, the winner is decided by a larger number of full solutions;
7. The final results will be announced on Sunday November 15th. The authors of the best solutions will be asked to present them during the final ceremony.
8. The list of winners will be made publicly available on the Competition website. Additionally, the winners will receive diplomas (sent later by ordinary mail to the address of the Team Captain's university).

## **§ 8**

### **Final Regulations**

1. The Organisers do not cover the costs of Internet connections or the use of Internet connections necessary to participate in the Competition.
2. The Organisers do not provide for any cash or material prizes.
3. All other issues not covered by these regulations are resolved by the Permanent Jury. The decisions of the Permanent Jury are irrevocable and not negotiable.