MINISTRY OF SCIENCE AND HIGHER EDUCATION

OF THE RUSSIAN FEDERATION

Federal State Autonomous Educational Institution of Higher Education "Kazan

(Volga Region) Federal University"
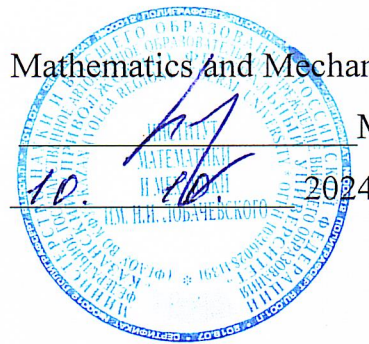
Nikolai Lobachevsky Institute of Mathematics and Mechanics

APPROVED BY

Acting Director of Nikolai Lobachevsky

Institute of

Mathematics and Mechanics

_____ M.F. Nasrutdinov

10. __ 2024

Evaluation System of the Entrance Examination

in Mathematics

2024

Entrance examinations for Bachelor's and Specialist's degree programs are conducted in-person and (or) using distance technologies.

It takes 3 hours and 55 minutes (235 min) to complete entrance examination in mathematics. The work consists of two parts with 19 tasks.

Part 1

Part 1 consists of 12 short answer tasks. Each of the tasks #1-12 is considered to be completed correctly if the examinee has given the correct answer in the form of an integer or a finite decimal. A correct answer to tasks #1-12 gives 1 point.

Part 2 (tasks with detailed answers)

Pat 2 consists of 7 detailed answer tasks. The number of points awarded for tasks #13-19 depends on the completeness of the solution and the correctness of the answer.
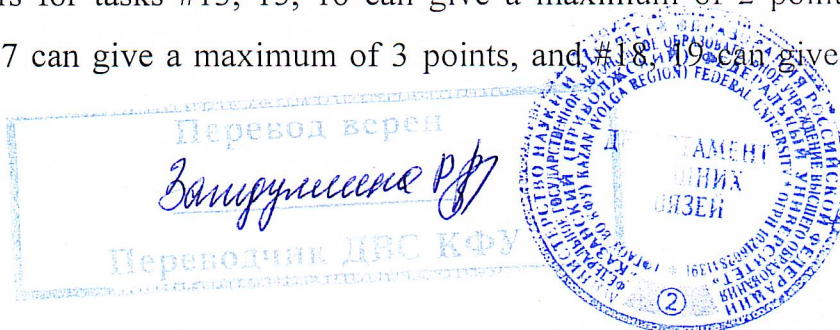
The answer sheet should contain first the number of the task (13, 14, etc.), followed by the full reasoned solution and the answer. Answers should be written down clearly and legibly.

General requirements for the tasks with detailed answers: the solution must be mathematically correct, complete; all possible cases must be considered. The solution methods, the forms of solution recording and the forms of answer recording can be different. The maximum score is awarded for a solution with reasonably obtained correct answer. 0 points is given for a correct answer with no solution text.

The examiners check only the mathematical content of the solution, and do not take into account the peculiarities of the writing.

When performing the task, any mathematical facts contained in the textbooks included in the federal list of textbooks approved for use in state-accredited educational programs of secondary general education may be used without proof and references.

In part 2, answers for tasks #13, 15, 16 can give a maximum of 2 points, answers for tasks #14, 17 can give a maximum of 3 points, and #18, 19 can give a maximum of 4 points.

Criteria for evaluating tasks with detailed answers

Task #13	
Content	**Points**
Both parts of the task have reasonably obtained correct answers	2
Part "a" has a reasonably obtained correct answer OR incorrect answers have been obtained due to a computational error, but there is a correct sequence of all steps for solving both parts: "a" and "b"	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	2

Task #14	
Content	**Points**
There is a correct proof of the statement in part "a", and reasonably obtained correct answer in part "b"	3
Reasonably correct answer has been obtained in part "b" OR There is a correct proof of the statement in part "a", and incorrect answer in part "b" received due to computational error, but with reasonable solution	2
There is a correct proof of the statement in part "a", OR an incorrect answer was received in part "b" due to computational error, but with reasonable solution, OR a reasonably correct answer is received in part "b" using the statement in part "a", but the part "a" is not completed	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	3

Task #15

Content	Points
Reasonably obtained correct answer	2
Reasonable answer that differs from the correct one by eliminating or adding one or several points, OR an incorrect answer is obtained due to a computational error, but there is a correct sequence of all steps for solution	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	2

Task #16

Content	Points
Reasonably obtained correct answer	2
The mathematical model is correctly constructed	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	2

Task #17

Content	Points
There is a correct proof of the statement in part "a", and reasonably obtained correct answer in part "b"	3
Reasonably correct answer has been obtained in part "b" OR There is a correct proof of the statement in part "a", and incorrect answer in part "b" received due to computational error, but with reasonable solution	2
There is a correct proof of the statement in part "a", OR an incorrect answer was received in part "b" due to computational error, but with reasonable solution, OR a reasonably correct answer is received in part "b" using the statement in part "a", but the part "a" is not completed	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	3

Task #18	
Content	**Points**
Reasonably obtained correct answer	4
Using correct reasoning, the range of a, differing from the target one only by excluding/including several points, is obtained	3
At least one correct parameter value has been obtained via correct reasoning	2
The problem is correctly reduced to investigation of the mutual arrangement of curves (analytically or graphically)	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	4

Task #19	
Content	**Points**
Reasonably correct answers are obtained in parts "a", "b" and "c"	4
Reasonably correct answers are obtained in part "c" and either in part "a" or "b"	3
Reasonably correct answers are obtained in parts "a" and "b" OR Reasonably correct answer is obtained in part "c"	2
Reasonably correct answer is obtained in either part "a" or "b"	1
The solution does not meet any of the criteria listed above	0
Maximum number of points	4

The maximum primary score is 32 points, which corresponds to 100 test points.

The minimum passing score is 39 test points. If an applicant receives less than 39 test points, the entrance examination is considered FAILED.

Scale for converting the primary score to the test score

PRIMARY SCORE	TEST SCORE
1	13
2	26
3	39
4	42
5	45
6	48
7	51
8	54
9	57
10	60
11	64
12	66
13	68
14	70
15	72
16	74
17	76
18	78
19	80
20	82
21	84
22	86
23	88
24	90
25	92
26	94
27	96
28	98
29	100
30	100
31	100
32	100