BAKU STATE UNIVERSITY
SPECIALIZATION: Teaching mathematics.
SUBJECT: Elementary mathematics – 2

EXAM QUESTIONS

1. General properties of the function (odd, even). Statements about odd and even functions.
2. General properties of a function (bounded from below, bounded from above, bounded). Statements regarding limited functionality.
3. General properties of the function (monotonicity). Statements about monotone functions.
4. General properties of the function (periodicity). Statements about periodic functions.
5. Graphing a function $y = f(x) + A \ \ (A \neq 0)$ using a graph of a function $y = f(x)$.
6. Graphing a function $y = f(x - a) \ \ (a \neq 0)$ using a graph of a function $y = f(x)$.
7. Graphing a function $y = k \cdot f(x) \ \ (k > 0)$ using a graph of a function $y = f(x)$.
8. Graphing a function $y = f(kx) \ \ (k > 0)$ using a graph of a function $y = f(x)$.
9. Graphing a function $y = -f(x)$ using a graph of a function $y = f(x)$.
10. Graphing a function $y = f(-x)$ using a graph of a function $y = f(x)$.
11. Graphing a function $y = |f(x)|$ using a graph of a function $y = f(x)$.
12. Graphing a function $y = f(|x|)$ using a graph of a function $y = f(x)$.
13. Graphing a function $y = A \cdot f(ax + b) + B$ using a graph of a function $y = f(x)$.
14. Study of a function using derivatives.
15. Graphing a function by applying the derivative.
16. Plotting a graph of a linear fractional function.
17. Solving equations by graphical method.
18. Equations solved by estimation and reasoning.
19. Solving high order algebraic equations.
20. Equations solved by trigonometric substitution $x = |a| \cdot \sin t \left(t \in \left[-\frac{\pi}{2}; \frac{\pi}{2} \right] \right)$.
21. Equations solved by trigonometric substitution $x = |a| \cdot tgt \left(t \in \left(-\frac{\pi}{2}; \frac{\pi}{2} \right) \right)$.
22. Equations solved by trigonometric substitution $x = \frac{|a|}{\sin t}$, $t \in \left[-\frac{\pi}{2}; 0 \right) \cup \left(0; \frac{\pi}{2} \right]$.
23. Equations solved by trigonometric substitution $x = |a| \cdot \cos t \left(t \in [0; \pi] \right)$.
24. Equations solved by trigonometric substitution $x = |a| \cdot ctgt \left(t \in (0; \pi) \right)$.
25. Equations solved by trigonometric substitution $x = \frac{|a|}{\cos t}$, $t \in \left[0; \frac{\pi}{2} \right) \cup \left(\frac{\pi}{2}; \pi \right]$.
26. Complex numbers and operations on them.
27. Operations on complex numbers given in trigonometric form.
28. Geometric representation of a complex number. Euler's formula.
29. Rules of addition and product in sets.
30. Permutations.
31. Jumpsuit.
32. Permutations with repetitions.
33. Jumpsuit with repetitions.
34. Elements of probability theory. Classic definition of probability.
35. Conditional probability. Geometric definition of probability.
36. Theorem about three perpendiculars.

37. Dihedral angle. The angle between two planes.
38. Trihedral angle and its elements.
39. Polar trihedra.
40. An analogue of the triangle inequality for a trihedral angle.
41. Sum of plane angles of a trihedron.
42. Sum of dihedral angles of a trihedron.
43. The first cosine theorem for a trihedron.
44. Second cosine theorem for a trihedron.
45. Theorem of sines for a trihedron.
46. Corollaries of the sine theorem for a trihedron.
47. The area of the orthogonal projection of a flat figure.
48. Formula for projections of tetrahedron faces.
49. Newton-Simpson formula for finding the volumes of bodies.
50. Volume of a body of revolution.