Lecture 5: Quiz

Name:

Problem 1

The **quadratic equation**: $x^2 + bx + c = 0$ has two solutions x_1, x_2. By writing the equation as $(x - x_1)(x - x_2)$ we get relations allowing to check the solution. Which identies are true? a) $x_1 + x_2 = b$ b) $x_1 \cdot x_2 = -c$ c) $x_1 * x_2 = c$ d) $x_1 + x_2 = -b$

Problem 2

Check all parts which are used to define what a (not necessarily commutative) group is

a) $1 \star x = x$ for all x
b) $x \star y = y \star x$
c) $x \star x = 1$.

d) $x \star (y \star z) = (x \star y) \star z$
e) Every x has an inverse y satisfying
$xy = 1$.
f) $x \star x = x$

Problem 3

Who did use letters as variables of algebraic expressions first?
a) Rene Descartes b) Arthur Cayley   c) Francois Viete,   d) Peano   e) Bombelli

Problem 4

For which equations are there closed formulas?

a) the quadratic equation.
b) the cubic equation.
c) the quartic equation.
d) the quintic equation.
e) the hextic equation.

Problem 5

Who found first a formula for the cubic equation by radicals?

a) Cardano, Tartaglia and del Ferro
b) One can not solve the cubic with radicals.
c) Lodovico Ferrari d) Kepler

Problem 6

The 15 puzzle was invented by
a) a mathematician b) a post master c) a math teacher d) a dentist

Problem 7

How many elements does the symmetry group of a square have?

a) 8 (4 rotations and 4 reflections) b) 24 (all permutations of 4 elements) c) 4 (4 reflections) d) 2 (2 reflections)

Problem 8

What is the world record for solving the Rubik cube?

a) 5.25 seconds   b) 15.66 seconds   c) 3.55 seconds   d) 20 seconds
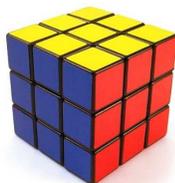
Problem 9

Which of the choices A-F is the Floppy puzzle?

A

B

C

Problem 10

What is the god number of the Rubik cube, the number of moves which allows to solve the cube?

a) 20.
b) 10.
c) unknown.
d) 6.