Imię i nazwisko:

Klasa:

Grupa 1

Wynik:

Question 1 (1 pt)

The set of solutions to the equation (x+1)(2x-1)=0 is:

A.
$$(-1,\frac{1}{2})$$

A.
$$(-1, \frac{1}{2})$$
 B. $\{-1, \frac{1}{2}\}$ C. $\langle -1, \frac{1}{2}\rangle$

C.
$$\langle -1, \frac{1}{2} \rangle$$

D. \emptyset

Question 2 (1 pt)

The decimal expansion of 0.1(26) is

A.
$$\frac{14}{111}$$

B.
$$\frac{25}{198}$$

C.
$$\frac{63}{500}$$

A.
$$\frac{14}{111}$$
 B. $\frac{25}{198}$ C. $\frac{63}{500}$ D. $\frac{126}{1001}$

Question 3 (1 pt)

Which of the following numbers belongs to the set $(\mathbb{Z} \cap \mathbb{R}) - \mathbb{N}$

A.
$$(-5)^2$$
 B. -5^2 C. $\frac{5}{2}$ D. $-\frac{5}{2}$

B.
$$-5^2$$

C.
$$\frac{5}{2}$$

D.
$$-\frac{5}{2}$$

Question 4 (1 pt)

The domain of the equation

$$\frac{x+1}{x-1} - \frac{x+2}{x-2} = 1$$

is the set:

A.
$$\mathbb{R} - \{-2, -1, 1, 2\}$$
 B. $\mathbb{R} - \{1, 2\}$ C. $\mathbb{R} - \{-2, -1\}$ D. $(2, \infty)$

B.
$$\mathbb{R} - \{1, 2\}$$

C.
$$\mathbb{R} - \{-2, -1\}$$

D.
$$(2, \infty)$$

Question 5 (1 pt)

How many elements does the set

$$\left\{ x : x \in \mathbb{N} \ \land \ \left(x = -1 \ \lor \ x = 1 \ \lor \ x = \sqrt{2} \ \lor \ x = \frac{3}{2} \right) \right\}$$

have?

Question 6 (3 pts)

Given the sets $A = \langle -1, 3 \rangle$ and $B = (-2, 0) \cup (2, 7)$. Mark on the number line the following sets:

- a) $A \cup B$,
- b) $A \cap B$,
- c) A B,
- d) B A,
- e) B A'.

Question 7 (2 pts)

You are given the following statements:

- 1. If a number is divisible by 6, then it is divisible by 3.
- 2. If x = 3, then $x^2 = 9$.

Write down the converse of each of these statements and show that the converse is false in each case.

Question 8 (4 pts)

Solve the equation:

$$\frac{(x^2 - 4)(x^2 + 1)}{x^2 + 4x + 4} = 0$$

Question 9 (3 pts)

Solve the inequality:

$$(x-2)(x^2-1)(x+3)(x+3) > 0$$

Liceum Batorego Test 1, page 4 of 4 September 22, 2017

Question 10 (3 pts)

There are 31 students in 1Bj class. 15 of them know German, 14 know French, 13 know Spanish. 7 know both French and German, 5 know Spanish and French, 3 know Spanish and German. 2 students know all three of the above mentioned languages.

- a) How many students do not know any of the three languages?
- b) How many students know exactly one of the three languages?
- c) How many students know at least two of the three languages?

Extra question

Adam listed all three-digit numbers and for each of them he calculated the product of its digits. He then calculated the sum of all those products. What result should he get?