Imię i nazwisko:
Klasa:
Grupa 2
Wynik:

Question 1. ***(1 pt.)***
The set of solutions to the equation $(x^2+1)(2x^2+1)=0$ is:

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

Question 2. ***(1 pt.)***
The decimal expansion of $0.(126)$ is

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

Question 3. ***(1 pt.)***
Which of the following numbers belongs to the set $(\mathbb{Q}\cap\mathbb{R})-\mathbb{Z}$

A. $(-5)^2$ B. -5^2 C. $\dfrac{25}{5}$ D. $-\dfrac{5}{2}$

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. $(2,\infty)$

Question 5. ***(1 pt.)***
How many elements does the set

$$\left\{x : x\in\mathbb{N}\ \wedge\ \left(x=-1\ \vee\ x=1\ \vee\ x=\sqrt{2}\ \vee\ x=\frac{4}{2}\right)\right\}$$

have?

A. 1 B. 2 C. 3 D. 4

Question 6 ***(3 pts)***

Given the sets $A = \langle -2, 5\rangle$ and $B = (-3, 1) \cup (2, 6\rangle$. 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 8, then it is divisible by 4.*
2. *If* $x = 5$, *then* $x^2 = 25$.

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:

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

Question 9 ***(3 pts)***

Solve the inequality:

$$(x-1)(x^2-4)(x+5)(x+5)>0$$

Question 10 ***(3 pts)***

There are 31 students in 1Bj class. 16 of them know German, 15 know French, 12 know Spanish. 7 know both French and German, 7 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?