

Imię i nazwisko:

Klasa:

Grupa 1

Wynik:

Question 1 (1 pt)

The number x has been rounded down to 12. If the percentage error of the estimate is $9.(09)\%$, then x is equal to:

- A. 10.8 B. 11.8 C. 12.8 D. 13.8

Question 2 (1 pt)

How many solution does the inequality $3|x - 4| + 5 < 2$ have?

- A. 0 B. 1 C. 2 D. infinitely many

Question 3 (1 pt)

$$|\sqrt{2} - 1| - 2|\sqrt{2} - 2| - 3|1 - \sqrt{2}| =$$

- A. -2 B. $6 - 4\sqrt{2}$ C. $6\sqrt{2} - 8$ D. $2\sqrt{2}$

Question 4 (1 pt)

$$(\sqrt{98} - \sqrt{578} + \sqrt{338})^2 =$$

- A. 6 B. $3\sqrt{2}$ C. 9 D. 18

Question 5 (1 pt)

The solution set to $|4|x + 2| - 3| > 4$ is

- A. \emptyset B. $(-\infty, -3.75) \cup (-2.25, -1.75) \cup (-0.25, \infty)$
C. $(-\infty, -2.25) \cup (-0.25, \infty)$ D. $(-\infty, -3.75) \cup (-0.25, \infty)$

Question 6 (2 pts)

Prove that $2^{15} + 2^{17} + 2^{18}$ is divisible by 26.

Question 7 (3 pts)

Solve:

$$(3x - 1)^2 - (2x + 3)(3x + 1) = (1 - 3x)(4 - x)$$

Question 8 (3 pts)

Solve:

$$|x + 3| - |x - 1| < -3$$

Question 9 (3 pts)

Rectangle has sides of lengths 78 and 61. Round the lengths of sides to the nearest 10 and hence estimate the area of the rectangle. Calculate the percentage error of your estimate.

Question 10 (4 pts)

Discuss the number of solutions to the equation:

$$|2x - 1| + |2x + 7| = k$$

depending on the parameter k .

Extra question

Discuss the number of solutions to the equation:

$$|x - a| + |x + a| = b$$

depending on the parameters a and b .