Answer on Question #71821 – Math – Discrete Mathematics

Question

What are the elements of the set S={x∈(-100,-50)⊣ | x≡6 mod 17}?

Solution

From $x \equiv 6 \, mod \, 17$ we can write x as $x = 17t + 6$, where t is integer number. According to the condition of problem $x \in (-100, -50)$. Hence, we obtain the inequality

$$-100 < 17t + 6 < -50 \rightarrow -106 < 17t < -56 \rightarrow -\frac{106}{17} < t < -\frac{56}{17}$$

$$-6\frac{4}{17} < t < -3\frac{5}{17}.$$

Because t is an integer, the solution of inequality $t = \{-6, -5, -4\}$. Therefore x of the set S

$t = -6 \rightarrow x = -6 \cdot 17 + 6 = -96$

$t = -5 \rightarrow x = -5 \cdot 17 + 6 = -79$

$t = -4 \rightarrow x = -4 \cdot 17 + 6 = -62$

$S = \{-96, -79, -62\}$

To implement the search on the computer, you must specify a cycle from -100 to -50 in steps of 1 and check the condition for each element $x - 6$ must be divisible by 17. Get the same answer.

Answer: $S = \{-96, -79, -62\}$.