House Numbers

Problem Description

Every night, Gustav walks his dog. When he steps out of his door, he randomly chooses to turn left or right and then walks to the end of the street and back. One night he decides to sum the numbers on the letterboxes he sees. The next night he turns in the opposite direction and does the same thing. He is astonished to find that the totals are the same.

Gustav considers that his house number must be pretty special to have this property, and wonders if any others do. In other words, what are the integers k and n such that $k < n$ and $1 + \ldots + (k-1) = (k+1) + \ldots + n$.

Task

Write a computer program to find every k and n (32-bit integers) that satisfy this condition.

Relates to Objectives

1.1 1.2 1.3 2.1 2.2 2.4 2.7 2.8 3.1 3.3 3.5 3.6 4.1 4.2 4.3

(2 points, Individual)