1033B - Square Difference

The task looks simple enough, but there is a problem. The number we want to check might be very large - it might not even fit into 64-bit integer. Checking primality for it certainly cannot be performed naively.

However, the input is no ordinary number. It is of form $A^2 - B^2$, which can be expressed as $(A - B)(A + B)$. This is prime if and only if $A - B = 1$ and $A + B$ is a prime. Since $A + B$ is at most $2 * 10^{11}$, we can use trial division to check its primality.

Complexity: $O(T\sqrt{A + B})$.

Alternatively, you could cheat and use big integers and test primality using Miller-Rabin algorithm. With Java's BigInteger.isProbablePrime it's not too much work.