Find time complexity T(n) for the following code snippet:

```
a = 1;
b = 1;
while(b < n)
{
  a += 1;
  b += a;
  cout<<"Hi";
}
```

Solution:

a	b
1	1
2	1+1=2
3	2+2
4	2+2+3
.	.
.	.
.	.
.	.
ƶ	2+2+3...ƶ

$b = \frac{ƶ(ƶ+1)}{2}$

$b < n$

$b \geq n \rightarrow \frac{ƶ(ƶ+1)}{2} \geq n$

$\rightarrow ƶ^2 \geq n$

$\rightarrow ƶ = \sqrt{n}$

Time complexity = $O(\sqrt{n})$