# Exercises

## 3.1-2 Show that for any real constants *a* and *b*, where *b* > 0,

a = 5;  
b = 2;

We remove the lower factors from quadratic equasion and then

## 3.2-3 Explain why the statement “The running time of algorithm A is at least O(n^2),” is meaningless.

The statement is meaningless because of the word “least”. O-notation shows the upper bound of the running time of algorithm A, which means worst case.

## 3.2-4 Is ? Is ?

Yes it’s true in both cases because in O-notation, we ignore the constant factors.

## 3.1-5 Prove Theorem 3.1.

Proof:   
f(n) = Ѳ(g(n)) if only  
f(n) = O(g(n))  
f(n) = Ώ(g(n))  
The O-notation is describing the upper bound of f(n), while the Ώ(g(n)) determine the lower bound of f(n). But both together they determine Ѳ(g(n)).