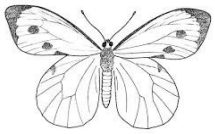
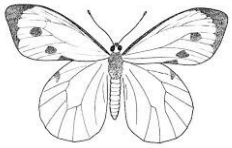

GTU Department of Computer Engineering
CSE 222/505
Spring 2015

Homework 03
Due date: March 16th 2015 16:00

1- Prove that $3n^2+2n-5=\Theta(n^2)$ using induction.
2- Prove that $3n^2+2n-5\neq\Theta(n^3)$
3- Prove that if $f(n)=\Theta(g(n))$ then $f(n)=O(g^2(n))$
4- Show formally if the following is true or not: n!=Ω(n^n)
5- Suppose $f(n)=\Theta(g(n))$. Prove that $h(n)=O(f(n))$ if and only if $h(n)=O(g(n))$.
6- Are there any functions f and g such that $f(n)=o(g(n))$ and $f(n)\neq\Theta(g(n))$? Prove your answer.

Notes

- Your submissions will be handwritten.
- Always provide your formal proofs using the definitions of asymthotic notations. No rules or limit expressions.
- Do not email your homework or submit it through moodle.
- You should handover the submissions to the TA (Abdullah Akay) before 16:00 on due date.