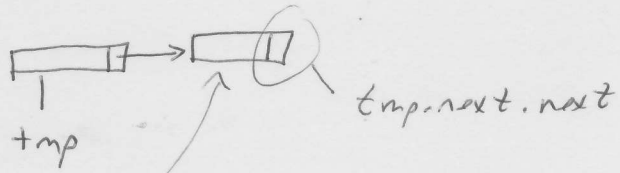
#1

```
if (first != null){ // list is not empty
    if (first.next ==null)  // list has only 1 node
        first = null;       // deletes first
    else { // there are at least 2 nodes, find next to last
        for (Node tmp= first; tmp.next.next != null; tmp= tmp.next);
        // now tmp points to 2nd to last node
        tmp.next = null;
    }
```



↑ this deletes

#2

a) N

b) 1

c) 1

d) $2N^3$

e) $\frac{\log(2N)}{\log(N)} = \frac{\log(2)}{\log N} + \frac{\log(N)}{\log(N)} = 1$ ($\frac{\log(2)}{\log N} \to 0$)

f) $\frac{\lg(N^2+1)}{\lg(N)} \sim \frac{\lg(N^2)}{\lg(N)} = \frac{2\log(N)}{\log(N)} = 2$

g) $\frac{N^{100}}{2^N} \to 0$

#3

a) $n \log n$

b) ~~$(N+1)N/2$~~ 2^p where $p = \lceil \log N \rceil$

order of growth N

c) $N \log N$