

CSCSE 222 Homework 2 (Due Feb. 12)

1. Given sets  $A$ ,  $B$  and  $C$ , simplify  $(A \cup (B - C)) \cup (C - (A \cap B))$ .
2. Given a finite set  $A$ , prove that if a function  $f : A \rightarrow A$  is not injective, then  $f$  is not surjective.
3. Given integer  $n$ , prove that  $3 \left\lceil \frac{n}{3} \right\rceil \leq n + 2$ .
4. Evaluate  $\sum_{k=1}^n 2^{n(1+k)}$ .
5. Evaluate  $\sum_{k=1}^n \frac{k}{(k+1)((k+1)^2 - 1)}$ .