Hometask #2

1. Let $M=(8,15)$, $N=(9,20)$ on real axis, then $K=M\cup N$ will be:
   a) $[8,20]$
   b) $(8,20)$
   c) $(9,20)$
   d) $(8,15)$
2. How many elements does this set have where *a* and *b* are distinct elements (P(x) – power set)?
   a) $P(\{a,b,\{a,b\}\})$
3. Translate each of these quantifications into English and determine its truth value.
   a) $\forall x\in\mathbf{R}(x^2\neq -1)$
   b) $\exists x\in\mathbf{Z}(x^2=2)$
4. Let $A=\{1,2,3,4,5\}$ and $B=\{0,3,6\}$. Find
   a) $A\cup B$
   b) $A\cap B$
   c) $A-B$
   d) $B-A$
5. Prove that if A and B are sets, then
   a) $A-B=A\cap B^c$
6. Let $A=\{0,2,4,6,8,10\}$, $B=\{0,1,2,3,4,5,6\}$ and $C=\{4,5,6,7,8,9,10\}$. Find
   a) $A\cap B\cap C$
   b) $(A\cup B)\cap C$
7. Draw the Venn diagrams for the following formulas
   a) $A\cap(B-C)$
   b) $A^c\cap B^c\cap C^c$
8. Simplify
   a) $A^C\cup(A\cup B^c\cup C^c)^c\cup(B\cap(A\cup C)^c)$