Quiz 1

(1) a) $\mathbb{N} < \mathcal{P}(\mathbb{N}) < \mathbb{R}$

b) $\mathbb{R}$ and $\mathcal{P}(\mathbb{R})$

(2) Proof by contradiction.

Suppose WOP were false.

S – a nonempty set of non-ve integers that contains no smallest element.

$P(n)$: $i \notin S$ for all $i \leq n$

T.P.: $P(n)$ is true $\forall n$

(3) $(a,c) \in R^2$. $\exists\ b$ such that $(a,b), (b,c) \in R \Rightarrow (a,c) \in R$

$\therefore R$ is transitive

$(a,b) \in R$ and $(a,a) \in R \Rightarrow (a,b) \in R^2$

4 a) $2^{\frac{n^2-n}{2}}$

b) $3^{\frac{n^2-n}{2}}$