# Transition to Advanced Mathematics: assignments 11

Let $A = \mathbb{R}[x] = \{a_0 + a_1x + a_2x^2 + \cdots + a_nx^n | a_i \in \mathbb{R}\}$

That is, $A$, is the set of all polynomials with coefficients coming from $\mathbb{R}$ and variable $x$.

Define a relation "$\preccurlyeq$" via $P \preccurlyeq Q$ iff $\deg(P) \leq \deg(Q)$

1. Give 5 examples of elements $P$ and $Q$ such that $P \preccurlyeq Q$.
2. Give 5 examples of elements $P$ and $Q$ such that $P \not\preccurlyeq Q$.
3. Is $\preccurlyeq$ a partial order relation? If so prove it. If not, provide a counterexample.
4. Is $\preccurlyeq$ a total order relation? If so prove it. If not, provide a counterexample.

These problems are due on April 15th