Marks

Q1. Use the definition of big oh (O) to prove that $\left|(3n^4 - 2n)/(5n-1)\right| = O(n^3)$

3

Q2. Let $G = \mathbb{R} - \{-1\}$. prove that $(G, *)$ is a group under the composition $*$ define as $a*b = a+b+ab;\ \forall a,b \in G$. Is this group commutative?

3+1

Q3. Show that permutation group S_3 with respect to multiplication (composition) is associative by an example. Is S_3 group commutative?

2+1