Assignment 4 Maths 1124.

Q1. Consider the transformation of $\mathbb{R}\times\mathbb{R}$ onto itself given by $(u,v)\to(x,y)$, where $x=au+bv$, $y=cu+dv$. Find conditions on (a,b,c,d) for this transformation to be bijective.

Q2. Prove that the set of all intervals (of length >0), with both end points rational, is countable.

Q3. Prove that every family of disjoint intervals (of length >0) is countable.

Q4 ~~Let $f: X\to Y$ be 1-1. Prove $f(X\setminus Y)=f(X)\setminus f(Y)$.~~

Q4. Let $f: X\to Z$. If $Y\subset X$ and f is 1-1 prove $f(X\setminus Y)=f(X)\setminus f(Y)$. Is 1-1 necessary?