Problems of the Week – 5 and 6

POW-5: Maximum-weight edge of a spanning tree

Prove that the weight of a maximum-weight edge in any minimum spanning tree is minimum, among all spanning trees of G.

POW-6: Matroids and minimum spanning trees

In matroid theory, we have covered the greedy algorithm for maximum-weight independent sets. Show that the problem of finding a minimum-weight maximal independent set of a given matroid can be reduced to the problem of finding a maximum-weight independent set in a matroid. Use this reduction to argue that the minimum spanning tree problem can be presented as a weighted-matroid problem.