Exercises for the PhD course Graph Theory

Lecture 7

1. Show that every graph can be embedded in $\mathbf{R}^3$ with all edges straight.
2. A graph is called outerplanar if it can be drawn (in the plane) so that every vertex lies on the outer face. Show that a graph is outerplanar if and only if it contains no subdivision of K_4 or $K_{2,3}$.
3. Use the four color theorem to prove that every planar graph is the edge-disjoint union of two bipartite graphs.