1/30/20

3. Homework (grad)
Due **2/6/20** before class

1. **Guarding Boundary vs. Interior (5 points)**
   Give an example of a polygon together with a placement of vertex guards, such that the whole polygon **boundary** is guarded but **not the whole interior**.

2. **Triangulating a Point Set (10 points)**
   A triangulation of a set of points P in the plane is a simple, planar embedded, connected graph $T = (P, E)$ such that (i) every edge in E is a line segment, (ii) the outer face is bounded by edges of $CH(P)$, and (iii) all inner faces are triangles.
   Give an algorithm for computing such a triangulation of n points in the plane and analyze its runtime.
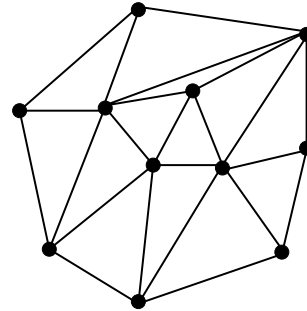
3. **Edge Flips (10 points)**
   Consider a triangulated quadrilateral a, b, c, d in the plane, with diagonal $\overline{ac}$. An *edge flip* replaces $\overline{ac}$ with $\overline{bd}$. We only consider *valid edge flips* that yield a valid new triangulation of the quadrilateral a, b, c, d.
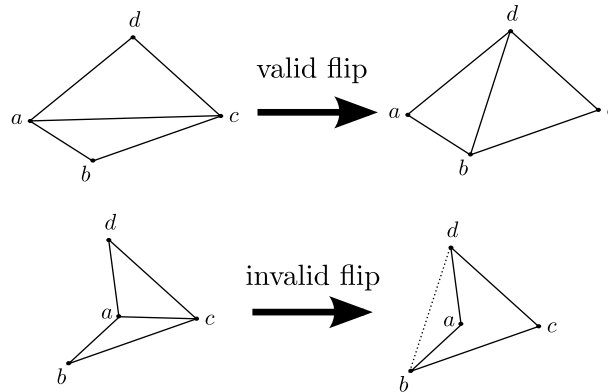
   Show that any two triangulations of a convex polygon can be transformed into each other by edge flips.