MA111: Contemporary mathematics
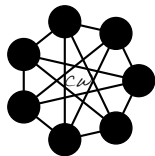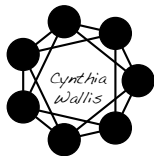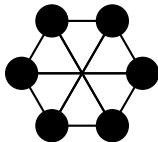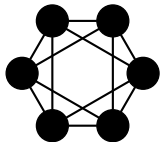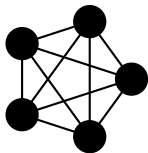
Jack Schmidt

University of Kentucky

October 19, 2012

Entrance Slip (due 5 min past the hour):

- Which of these glow puzzles is solvable?

Today we try to discover Fleury's and Hierholzer's Pillars

Context: glow puzzle strategy

- There are 5 pillars to glow puzzle mastery

- Covered 3 of them yesterday: count how many edges touch a point

- These pillars told us whether and where to start

- After today's meditation I will recount two more pillars

- But first let us look into the light

Activity: Meditate on the glow

- The true puzzle lies within, but a shadow lies on the paper

- Complete the four faded puzzles on the paper

- There is no success or failure, only results

- What results in a complete tracing without repeated edges?

- When do you know the tracing cannot be completed?

- Fluery observed that you cannot win if you have already lost.

Theorem (Fleury)

Erase edges as you use them. You have lost exactly when you disconnect the graph. Otherwise, you can always complete your tracing.

- Hierholzer observed that the solution is easy

Theorem (Hierholzer)

Where two circles touch, switch circles.

- You only need to use one of these to solve Glow puzzle.

Assignment and exit slip

- Read 5.1, 5.2, 5.3, 5.5, 5.6. Skim 5.7
- Play some GlowPuzzle or other alternatives or even Jack's first level
- **Exit slip:** How do you solve Jack's glow puzzle with extra edges?