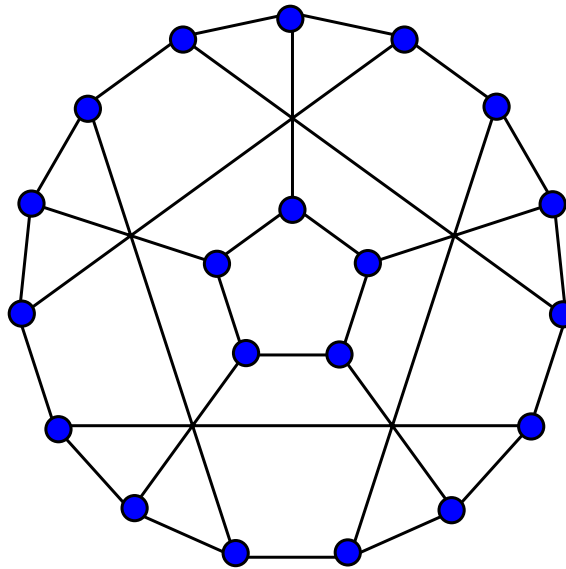


Homework 4: Snarks

Week 2

Mathcamp 2010

1. Verify the missing steps in our proof that the dot product preserves snarkiness; specifically, show that the dot product of two snarks is still a 3-regular connected bridgeless graph of girth ≥ 5 .
2. Consider the following graph:



Show that this graph has the Petersen graph as a minor.

3. Show that the above graph is a snark¹.
4. (Hard!) Can a snark be planar?
5. (Hard!) There are at least 2 snarks on 18 vertices. Can you find one?

¹Specifically, it's the flower snark!