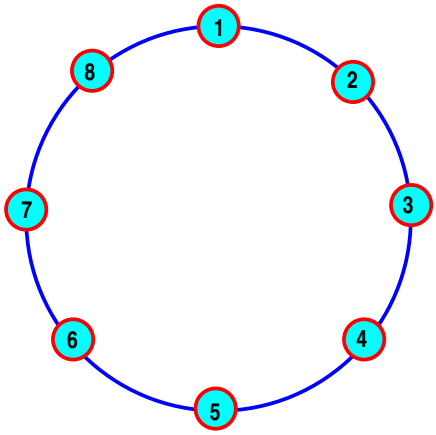
CSci 8314	Practice Exercises	Set #4	03-13-2019

1 What is the graph Laplacean associated with the graph shown on the right for the case $n = 8$? (Assume all weights are equal to one).



2 Show that for any indicator (i.e., partition) vector $x \in \{+1, -1\}^n$ that is $\neq \pm \mathbb{1}$ we have

$$8 \leq x^T L x \leq 4n$$

3 Show that the largest eigenvalue of L is equal to 4. What is an associated eigenvector?

4 What is (are) the optimal partition vector (s) in this case? [optimal in the sense of yielding equal size partitions with the smallest # edge-cuts]