1. • Consider the following graph, to be called $G$:

![Graph Image]

• Formulate the SDP relaxation of the max-cut problem for this graph.
• Use cvx to solve the above SDP relaxation problem and then apply the randomization method as described in the lecture. Report the results of your experiment.
• Let $G$ be the above graph. Use cvx to compute the value of $\theta(G)$ (the theta function of Lovász).
• Using cvx to compute the value of $\theta(C_5)$.

2. Prove: If $A \in \mathcal{S}_+^{n \times n}$ and $B \in \mathcal{S}_+^{n \times n}$, then $A \circ B \in \mathcal{S}_+^{n \times n}$, where $\circ$ is the component-wise product of the two matrices.