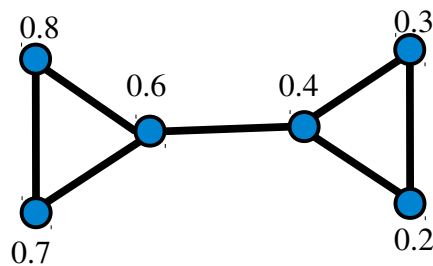


1. For this question we're going to use this graph and initial beliefs:



- Calculate the first two iterations of the repeated averaging procedure.
- Can you calculate what the final consensus will be? What is it?
- Suppose you had the same six people with the same beliefs in the complete network. What would their consensus be? Would it be different from your answer to (b)? Why is it different, or why is it the same?
- Would your answer to (c) change if there were different initial beliefs? Why or why not?

2. There is a variation of the linear averaging procedure called the “bounded confidence” model. Here's the idea. There is a bound, call it b , which indicates if I consider your opinion credible or not. If your opinion is within b of my opinion, I will take you as a serious person and I will average with you. But, if your opinion is further away from mine, then I will ignore you and not average with you.

Here's an example: $b = .4$, my opinion is $.3$, and yours is $.6$. I will take you seriously and average with you. But if $b = .1$ and the opinions are the same, I will not average with you. If we're the only two people in the group, I will not change my belief at all, nor will you change yours.

- Use the bounded confidence model on the graph from problem 1 where $b = .15$. Calculate the first two steps of the model. Can you predict what final state of the model will be?
- Do the same thing again with $b = .21$.
- And again with $b = .5$.

3. Let's continue to think about the bounded confidence model. I want you to find a set of initial beliefs and a b that lead to different outcomes in the complete graph and the cycle (both regular networks). Can you make any general conclusions about why there is this difference?