

Social Choice 3/9/21 - beatpath etc.

1.

In a certain pairwise comparison graph, A beats B by a margin of 5 and B beats C by a margin of 3. What can you conclude about the strongest beatpath from A to C?

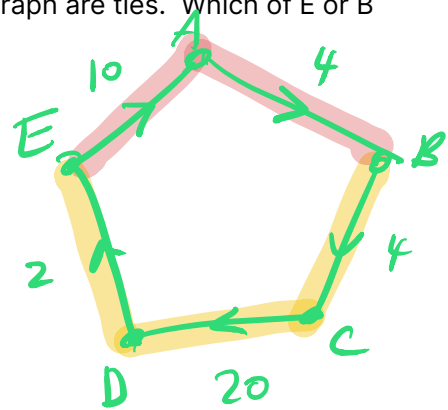
- (A) It has strength 3.
- (B) It has strength 5.
- (C) It has strength at least 3. (There's a path with strength 3, but some other path may be stronger.)
- (D) It has strength at most 5. (There's a path has strength 5, but some other path may be weaker.)



2. Suppose a PWCG contains a cycle $A \rightarrow B \rightarrow C \rightarrow D \rightarrow E \rightarrow A$ and the margins are 4, 4, 20, 2, 10 on those arrows. Suppose all the other head-to-heads in the graph are ties. Which of E or B eliminates the other in the beatpath method?

- (A) B eliminates E
- (B) E eliminates B
- (C) neither
- (D) this is not enough information

$B \rightarrow E$ strength 2
 $E \rightarrow B$ strength 4



3. Which TWO of the following are TRANSITIVE relations?

- (A) is heavier than
- (B) overlaps with
- (C) has shaken hands with
- (D) equals
- (E) is larger than 5

if A heavier than B and B heavier than C, then

A heavier than C ✓

$A=B, B=C \Rightarrow A=C$ ✓

"overlaps" is not transitive!



That one is not even a relation!
(only applies to one number, not to a pair)