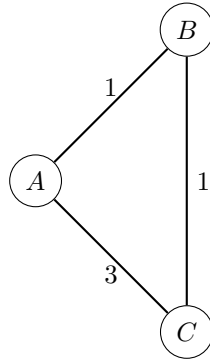


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Pre-lecture exercises will not be collected for credit. However, you will get more out of each lecture if you do them, and they will be referenced during lecture. We recommend **writing out** your answers to pre-lecture exercises before class. Pre-lecture exercises usually should not take you more than 30 minutes.

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Consider the following graph, where the *weights* (the numbers on the edges) are meant to represent the cost of walking along an edge.



1. Suppose you do BFS starting at the node  $A$ . What does BFS find as the shortest path from  $A$  to  $C$ ?
2. If you take the weights into account, what is the shortest path from  $A$  to  $C$ ? (By “take the weights into account” we mean add up the weights along each path to get the length of a path. So, with the weights, the cost of the path  $A \rightarrow C \rightarrow B$  would be  $3 + 1 = 4$ .)
3. Try to think about how you would design an algorithm to find shortest paths in weighted graphs. Can you modify BFS to do it?