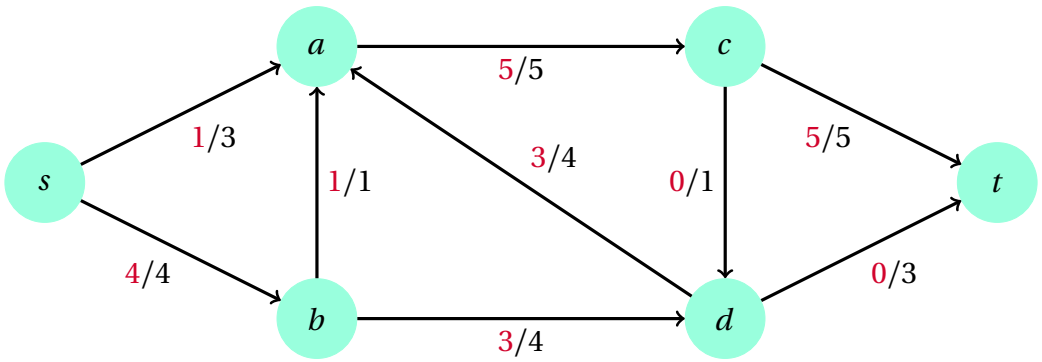
Week 9 Preparation

Instructions to the students: The preparation problems are not assessed, but we strongly recommend that you try to solve them before your applied class this week. These preparation problems test your basic knowledge of the contents taught in the seminar of the previous week. The problems in the applied class assume that you have this basic knowledge and will build on top of it. You might find it helpful to try these problems before doing the quiz that is due this week.

Problems

Problem 1. Consider the following flow network in which the current flows are in *red* and the capacities of the edges are in black:



(a) Draw the corresponding residual network.

(b) Identify an augmenting path in the residual network and state its capacity.

(c) Augment the flow of the network along the augmenting path, showing the resulting flow network.

(d) Complete the Ford-Fulkerson method for the network, showing the final flow network with a maximum flow.

(e) Using your solution to the max-flow problem, list the vertices in the two components of a minimum cut in the network. Identify the edges that cross the cut and verify that their capacity adds up to the value of the maximum flow.