1. Type 1 augmenting paths:

- sadt → 15
- scft → 15
- sebt → 10

(s,a) and (f,t) are at capacity

Trying all Type 1 and Type 2 augmenting paths that start with (s,c) or (s,e) and end with (b,t) or (d,t) yields no more augmenting paths

\[ \therefore \text{ max. flow } = 40 \]

A max. flow function and the min. cut are shown below.

Left-to-right edges across cut have following capacities:

- (s,a) - 15 \( \therefore \text{ cut capacity } = 40 = \text{ max. flow} \)
- (e,b) - 10 \( \therefore \text{ cut is a min. cut} \)
- (f,t) - 15
The chromatic number is 3, a 3-coloring is shown below:

Fewer than 3 colors is not possible because vertices $V_1, V_2, V_3$ above form a triangle and so they require 3 different colors.