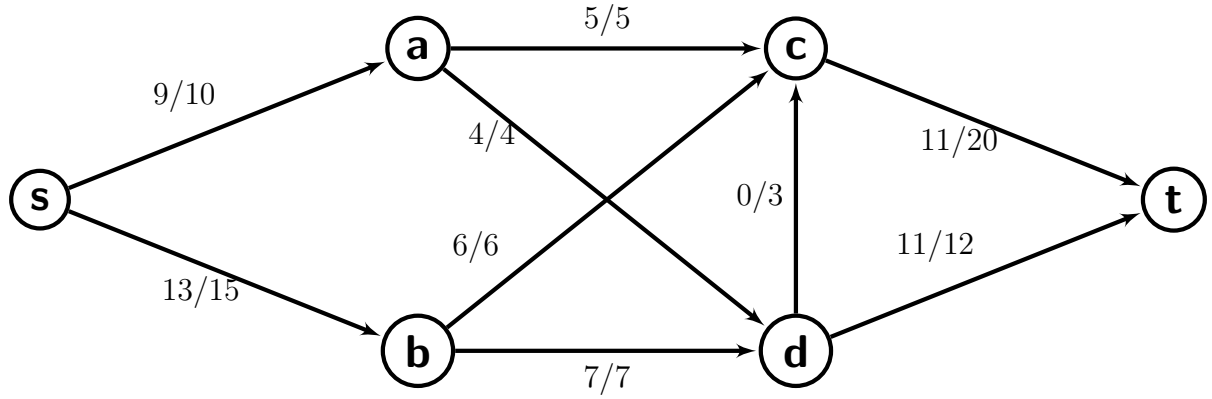
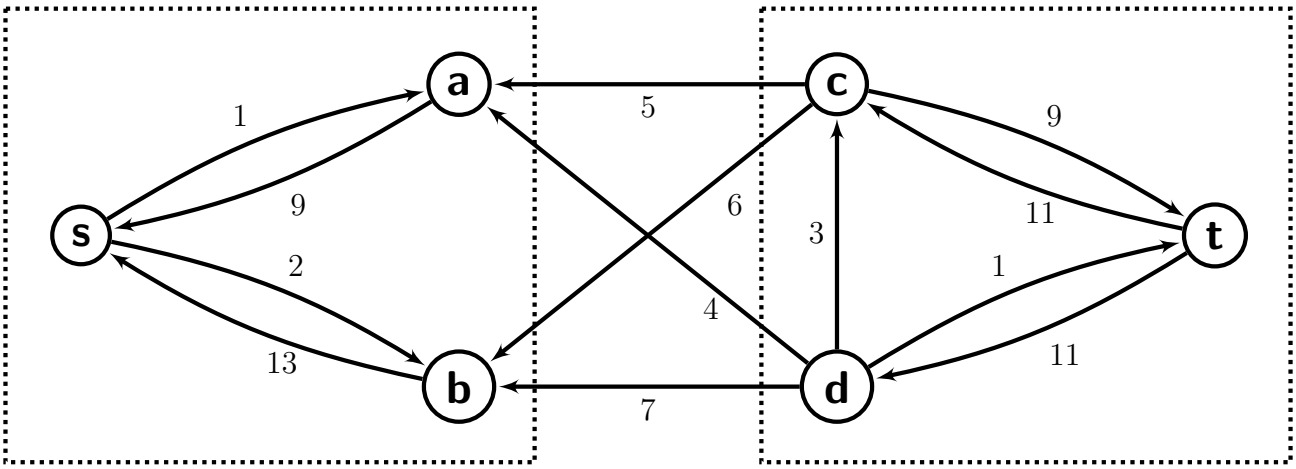
(a)



(b)



(c)

$$\begin{aligned} z &= & 5x_1 & +x_2 \\ x_3 &= 2 & -x_1 & +x_2 \\ x_4 &= 4 & -x_1 & -x_2 \\ x_5 &= 3 & & -x_2 \end{aligned}$$

Basic solution $= (0, 0, 2, 4, 3)$ (in the order $(x_1, x_2, x_3, x_4, x_5)$), entering var $= x_1$, leaving var $= x_3$, pivot $x_1 = 2 - x_3 + x_2$.

$$\begin{aligned} z &= 10 & +6x_2 & -5x_3 \\ x_1 &= 2 & +x_2 & -x_3 \\ x_4 &= 2 & -2x_2 & +x_3 \\ x_5 &= 3 & & -x_2 \end{aligned}$$

Basic solution $= (2, 0, 0, 2, 3)$, entering var $= x_2$, leaving var $= x_4$, pivot $x_2 = 1 - \frac{1}{2}x_4 + \frac{1}{2}x_3$.

$$\begin{aligned} z &= 16 - 2x_3 - 3x_4 \\ x_1 &= 3 - \tfrac{1}{2}x_3 - \tfrac{1}{2}x_4 \\ x_2 &= 1 + \tfrac{1}{2}x_3 - \tfrac{1}{2}x_4 \\ x_5 &= 2 - \tfrac{1}{2}x_3 + \tfrac{1}{2}x_4 \end{aligned}$$

Basic solution $= (3, 1, 0, 0, 2)$. Simplex terminates since all coefficients in the objective are negative. Answer is 16.