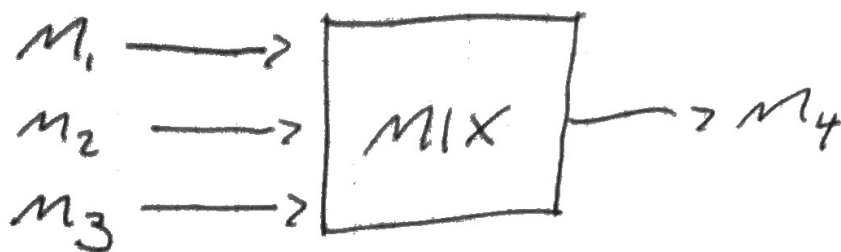


Øving P1

Oppg 1a)



$$x'_{\text{HNO}_3} = 0,23$$

$$x'_{\text{H}_2\text{SO}_4} = 0,57$$

$$x^2_{\text{HNO}_3} = 0,90$$

$$x^3_{\text{H}_2\text{SO}_4} = 0,13$$

$$x^4_{\text{HNO}_3} = 0,27$$

$$x^4_{\text{H}_2\text{SO}_4} = 0,60$$

Molbrøker

$$M_1 x'_{\text{HNO}_3} + M_2 x^2_{\text{HNO}_3} = M_4 x^4_{\text{HNO}_3}$$

$$M_1 x'_{\text{H}_2\text{SO}_4} + M_3 x^3_{\text{H}_2\text{SO}_4} = M_4 x^4_{\text{H}_2\text{SO}_4}$$

$$M_1 + M_2 + M_3 = M_4$$

$$M_4 = 100 \text{ kg/s}$$

M_1 , M_2 og M_3 er ukjente

1b)

- Inn: en funksjon:

- definer kjente variabler

- definer ukjente

- legg inn likninger

- Gjøtt ukjente

- Scipy.optimize.root(funksjon, gjøttninger)

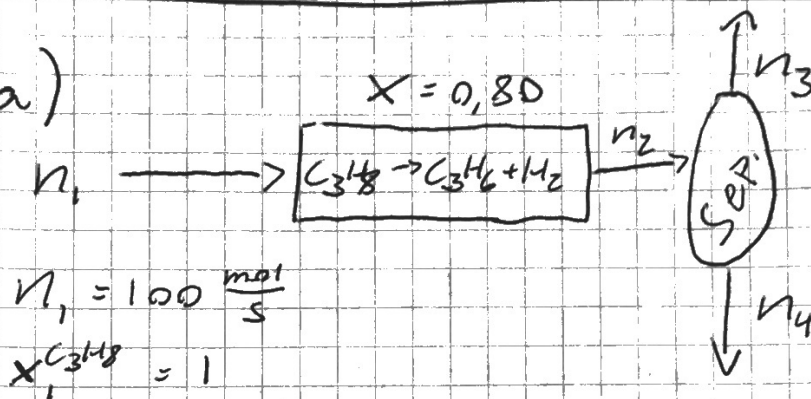
2c)

CO: 29,58
 H_2 : 29,21
 CH_4 : 44,10
 N_2 : 29,41
 CH_3OH : 55,70

2d)

CO: 29,66
 H_2 : 29,19
 CH_4 : 44,08
 N_2 : 29,49
 CH_3OH : 55,61

3a)



3b)

$$n_2^{C_3H_8} = n_1^{C_3H_8} - X \cdot n_1^{C_3H_8}$$

$$n_2^{C_3H_6} = X \cdot n_1^{C_3H_8}$$

$$n_2^{H_2} = X \cdot n_1^{C_3H_8}$$

3d)

Topp

$$n_3^{C_3H_8} = 0,01 \cdot n_2^{C_3H_8}$$

$$n_3^{C_3H_6} = 0,9 \cdot n_2^{C_3H_6}$$

$$n_3^{H_2} = 0,99 \cdot n_2^{H_2}$$

Bottom

$$n_4^{C_3H_8} = n_2^{C_3H_8} - n_3^{C_3H_8}$$

$$n_4^{C_3H_6} = n_2^{C_3H_6} - n_3^{C_3H_6}$$

$$n_4^{H_2} = n_2^{H_2} - n_3^{H_2}$$