

B2-3

$$1) F = D + W$$

$$zF = x_D D + x_W W$$

$$\uparrow F = \begin{cases} 0.5 \times 100 = 0.99 D + 0.05 W \end{cases}$$

$$\uparrow F = \begin{cases} 0.5 \times 100 = 0.01 D + 0.95 W \end{cases}$$

$$= \text{mit Hilfe von } D = \underline{47.87 \text{ kmol/h}}, W = \underline{52.10 \text{ kmol/h}}$$

$$2) \text{ Fenske'sche Anzahl } = x_D = 0.99, x_W = 0.05, \alpha = 2.5$$

Σ x_i = 1

$$S_m = \underline{8.2}$$

$$3) y = \frac{\alpha x}{(\alpha - 1)x + 1} \quad \text{mit } x_F = 0.5 \Rightarrow y_F = 0.714$$

$$\text{d.h. } \frac{R_m}{R_m + 1} = \frac{x_D - y_F}{x_D - x_F} = \frac{0.99 - 0.714}{0.99 - 0.5} = 0.563$$

$$\text{d.h. } R_m = \frac{0.563}{1 - 0.563} = 1.29 \approx \underline{1.3}$$

4) Gilliland

$$R = \frac{L}{D} \quad \text{d.h. } L = DR$$

$$V = D + L = D + DR = D(1 + R)$$

$$D = 47.87, R = 1.2 \quad R_m = 1.56 \quad \text{d.h.}$$

$$V = 47.87 \times 2.56 = \underline{123 \text{ kmol/h}}$$