

VLE data for the 1,2 dichloroethane(1)/methanol(2) at 50°C are as follows:

P(kPa)	x_1	y_1
55.55	0.00	0.00
58.79	0.042	0.093
61.76	0.097	0.174
64.59	0.189	0.265
65.66	0.292	0.324
65.76 (az)	0.349	0.349
65.59	0.415	0.367
65.15	0.493	0.386
63.86	0.632	0.418
62.36	0.720	0.438
59.03	0.835	0.484
54.92	0.893	0.537
48.41	0.945	0.620
31.10	1.00	1.00

From these data:

1. Calculate and plot $\ln\gamma_1$, $\ln\gamma_2$, and G^E/x_1x_2RT vs x_1 .
2. Find constants for:
 - a. Margules 2 - suffix (regular solution) by linear regression of $\ln(\gamma_1/\gamma_2)$ vs x_1 .
 - b. Margules 3 - suffix by linear regression of G^E/x_1x_2RT vs x_1 .
 - c. Van Laar by linear regression of $\text{SQRT}(\ln\gamma_1)$ vs $\text{SQRT}(\ln\gamma_2)$.
3. Using constants found in 2a, b and c, plot the theoretical G^E/x_1x_2RT vs x_1 on the plot with data points from part 1.