CHE 305 – Separation Processes
Spring 2010 – In Class Exercise on Single Stages

When the relative volatility is approximately constant, the following equation can be used to generate an XY phase diagram.

$$y_1 = \frac{\alpha_{12} x_1}{1 + x_1(\alpha_{12} - 1)}$$

The attached XY phase diagram gives VLE data for the following values of the relative volatility (α_{12}): 2, 4, and 10.

100 moles/hr of an equimolar binary mixture is to be separated in a single stage (flash). Draw the q-lines for operation at the bubble point, 60 % vaporization, and the dew point. Determine the compositions of the exiting liquid and vapor streams at 60% vaporization for each curve.

	Relative Volatility		
Composition	2	4	10
x_1			
x_2			
y_1			
y_2			