

HOMEWORK PROBLEM #1
PETROLOGY (GEOLOGY 255)

- I. Refer to the ternary phase diagram below (Figure 1):
 - a. Describe in detail the equilibrium crystallization path for melt composition a. Just as the melt composition reaches the first univariant boundary between minerals A and B, calculate the fractions of melt and crystals using the lever rule.
 - b. Describe in detail the equilibrium melting path for rock composition b. Compute the fractions of minerals A, and B that constitute the first melt composition.

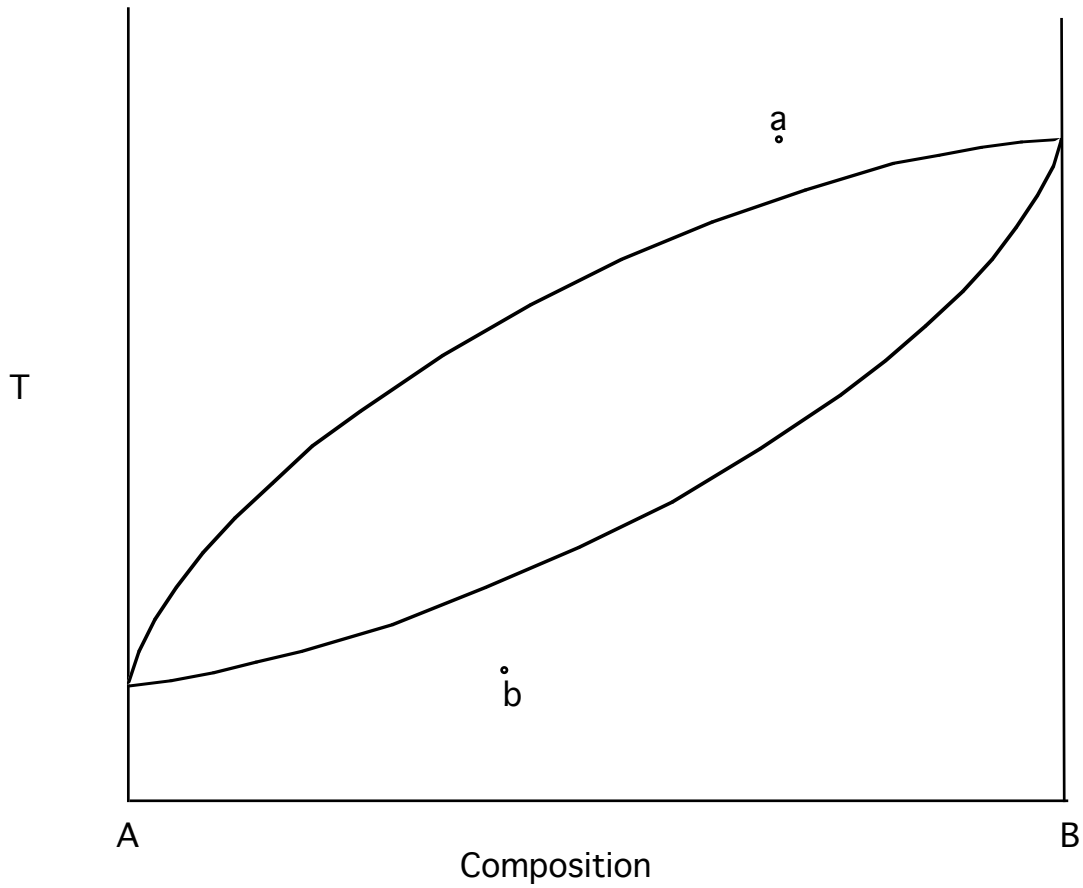


Figure 1

- II. In the phase diagram below (Figure 2), describe in detail the path of crystallization for compositions **a** and **b** under conditions of
- a) equilibrium crystallization and
 - b) perfect fractional crystallization.