The steady-state, one-dimensional temperature distribution in a composite wall, made of slabs of three different solid materials, is shown below. Each material has a constant, but different, thermal conductivity k. The heat fluxes q" within each material are indicated in the diagram.
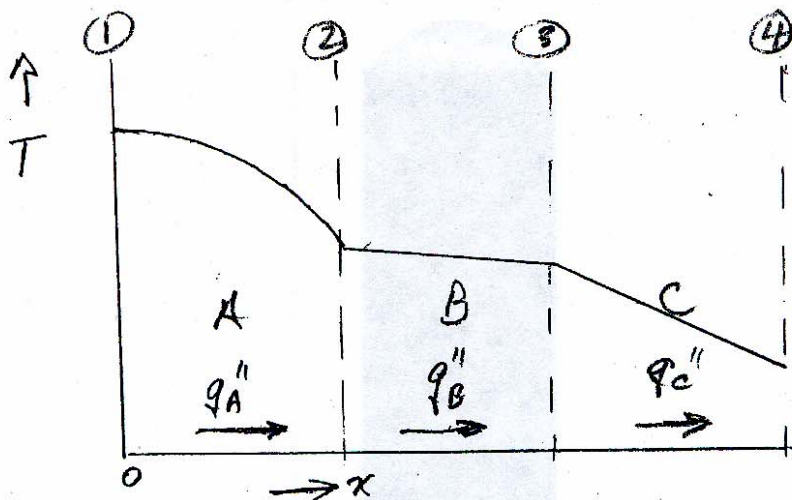
a) What is the relative magnitude of q_B" and q_C"?

b) How does q_A" vary with distance?

c) What is the relative magnitude of q_A" and q_B" at position 2?

d) What is the relative magnitude of k_B and k_C?

e) What is the relative magnitude of k_A and k_B?

f) Sketch a plot of q" versus x labelinq the positions 1, 2, 3, and 4 and showinq q_A", q_B" and q_C".

g) What is likely to be to the left of position x? What else might be there?

h) The region to the right of slab c is a fluid with heat transfer coefficient h and temperature far from position 4 of T_∞. Write an expression relating surface temperature T_4, T_∞, k_C, and $\dfrac{dT}{dx}$ in slab c.