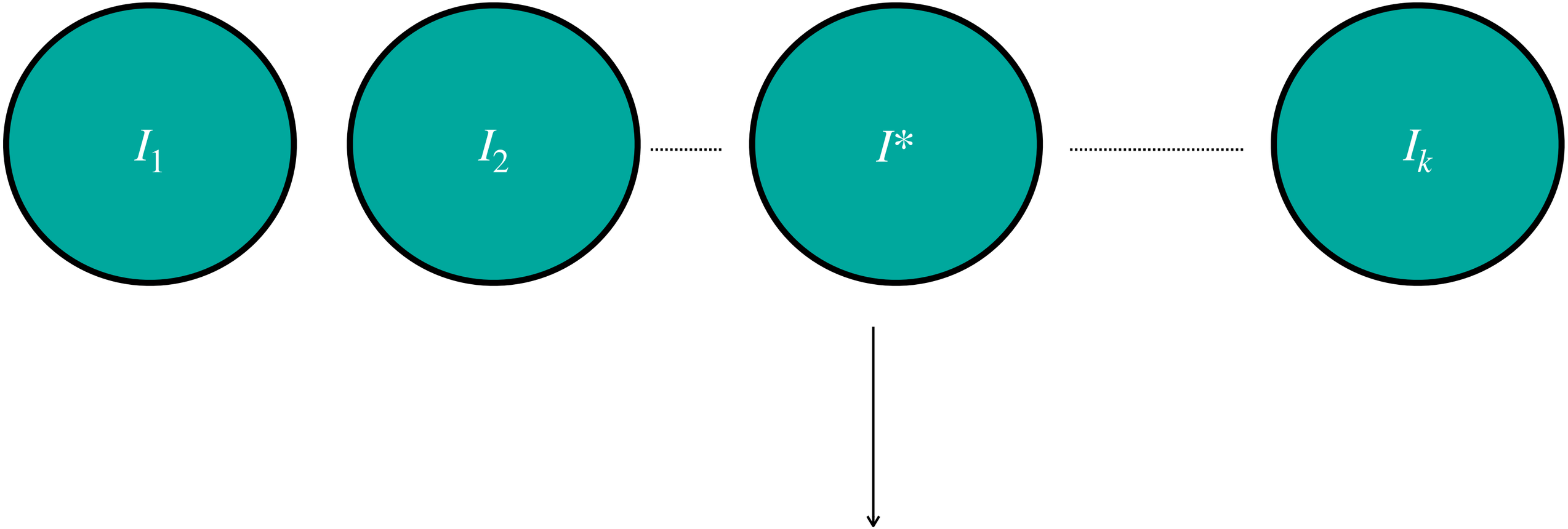

I_1
I_2
I^*
I_k
gives solution