

Thinking about age-structured models

1. Sketch reasonable graphs of $b(a)$ and $\mu(a)$ for the human population.
2. What do the following quantities represent?

$$(i) \quad N(t) = \int_0^{\infty} n(a, t) da$$

$$(ii) \quad \int_{t_1}^{t_2} \mu(a) n(a, t) dt$$

$$(iii) \quad \int_0^{\infty} b(a) n(a, t) da$$

3. Find the integrating factor and solve equation (7). (It is a first order linear equation which you would have learnt to solve in second semester in first year. Any first year calculus text should describe the method in sufficient detail to remind you if you have forgotten.)
4. There is an error in the diagram of page 3 in the notes. What is it? Sketch a correct version of the diagram.