Problem statement A radioactive substance A decays at a rate proportional to the amount of the substance present.

a) Suppose that an initial amount of 10 micrograms decays after 8 hours to 7 micrograms. Determine a formula for $A(t)$, the amount of substance A present at time t.

b) In the presence of a certain gamma ray flux, the radioactive decay of the substance is increased. In fact, when an initial amount of 10 micrograms of A is subject to this radiation, after 8 hours only 2 micrograms of A remain. Determine a formula for $B(t)$, the amount of substance A present at time t when the radiation mentioned is present.

c) Suppose we are presented with 10 micrograms of substance A and wish to have 5 micrograms after 8 hours. We are allowed to "turn on" the gamma radiation at some time during the 8 hours (but it must stay on after it is turned on!). At what time should the radiation be introduced in order to obtain 5 micrograms of A after 8 hours?