3. Suppose a point source of fast neutrons is placed in a large tank of water. At various distances from the source, indium foils (sandwiched between cadmium foils) are exposed to the neutron flux and thereby activated. Exposure times and foil areas are constant. The following data are obtained (after correction for activity decay, etc.):

r(cm)	6	8	10	12	14	16	18	20	22	24	26	28	30
A(In)	890	550	302	180	101	61	40	26	18	11.5	8.7	5.7	4.0

r is the distance from the source to the indium detector, and A is the activity in counts per minute of the indium detector (activity is due to 1.44 ev neutrons). From these data, calculate $(r^2)_{av}$. (N.B. The activity A is not proportional to the number of neutrons in the interval between r and r + dr.) Values of A for larger r can be determined by semilogarithmic extrapolation.

4. Consider a substance in which λ is constant. In this case, what is the relation between the age τ and the actual "time from birth"?

5. Using the point source solution for q, find $(r^2)_{av}$ in terms of τ. Apply this result to the hydrogen problem discussed in the sections before and after equation (6-17). Show that the same values are obtained using age theory as in the vector averaging process.