ENGINEERING PHYSICS 4D3

Assignment #3

Set:
Due:

1. [Duderstadt & Hamilton 5-6] Determine the neutron flux in a sphere of nonmultiplying material of radius R if an isotropic point source of strength, S_o neutrons per second is placed at the center of the sphere. Assume the sphere is surrounded by a vacuum.

2. [Duderstadt & Hamilton 5-10] Consider an infinite nonmultiplying medium containing a uniformly distributed neutron source. If one inserts an infinitesimally thin sheet of absorber at the origin, determine the neutron flux throughout the medium.

3. Consider a planar thermal neutron source, S neutrons / cm^2 in the middle of a slab of concrete of thickness, a cm.
   a) What is the probability that the neutron will pass from the centre to the edge without a collision?
   b) What is the probability that it will ultimately diffuse from the centre to the edge?
   [The solution to this problem exists on my web site. Can you find it?]