2. Microscopic cross-sections for 1H in units of barns for 5 groups were provided from the code NJOY. Given an infinite tank of high-pressure hydrogen, 30 atm, encloses a bare sphere of 235U. Compute the scalar flux φg and the current Jg in the hydrogen using the separable, P1 equivalent, and extended Legendre approximations. Compare your solutions graphically.

The neutron transport equation for an infinite medium can be written as:

Where:

Integrating over an energy bin:

Where:

Adding a term to each side:

Where:

will be the same for both sides of the equation.