From the mobility of a semiconductor, we can deduce the mean-free-path for backscattering. Answer the following questions.

1a) The electron mobility in pure silicon at room temperature is about 1360 cm\(^2\)/V-s. What is the MFP? (The appropriate effective mass to use in this case is the conductivity effective mass, \(m^* = 0.26m_0\).

1b) The electron mobility in pure gallium arsenide at room temperature is about 8200 cm\(^2\)/V-s. What is the MFP? (The appropriate effective mass to use in this case is \(m^* = 0.066m_0\).)