

**ELEG 667-010 - Advanced Nanostructure Devices – Fall 2006**  
**Homework #4 - due Monday, 16 October 2006, in class**

1. Problem 3.1 b) only, in chapter 3, Lundstrom, p. 154 in 2nd edition. Hint: put the integral into the Fermi- Dirac form – the pages from Pierret are on the web site.
  
2. Problem 3.3, in chapter 3, Lundstrom, p. 155 in 2nd edition.
  
3. Problem 3.5, in chapter 3, Lundstrom, p. 155 in 2nd edition. Hint: let  $v_z = v \cos(\theta)$  and integrate from 0 to  $\pi/2$  (i.e. along positive axis only). The result has the form  $J/(-q) = n v_x$  (Richardson velocity)
  
4. Problem 3.17, in chapter 3, Lundstrom, p. 157 in 2nd edition. Hint: let  $\tau_o' = \tau_o^3$ ; and let  $s' = 3s$ .

Homework assignments will appear on the web at:

<http://www.ece.udel.edu/~kolodzey/courses/eleg667f06.html>

Note: On each homework and report submission, please give your name, the due date, assignment number and the course number. For full credit - include units/dimensions for all numerical quantities