**Essentials of MOSFETs**

**Lecture 5.4: Review of PN Junctions**

**Short Problem**

Mark Lundstrom
Purdue University, Fall 2018

Consider a PN diode in which $J_n >> J_p$ so that the diode current is given by

$$I_D = A_D J_n = qA_D \frac{D_n}{W_P} \frac{n_i^2}{N_A}\left(e^{qV_A/k_BT} - 1\right).$$

1) At a given forward bias at $T$ = 300 K, we measure a diode current. How much do we need to increase the forward bias, $V_A$ in order to increase the diode current by a factor of 10?