EECS 312 – Electronic Circuits I – Homework 3
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1. Fill in the missing values in the table. Diodes A to F are Junction Diodes. Assume V_T=25mV.

Diode	I_S (A)	n	V_D (V)	I_D (mA)	P_D (mW)
A	$1x10^{-14}$	1.2	0.65	.025	.017
B	$1x10^{-9}$	1.7	.634	3	1.9
C	$3x10^{-12}$	1.34	0.68	2	1.4
D	$2.68x10^{-10}$	1.9	0.5	.01	0.005
E	$9.24x10^{-16}$	1.1	.77	1.3	1
F	$1x10^{-13}$	1.01	.67	29	20

2. A Junction Diode with n=1.3 conducts 0.8mA at 0.7V, $I_D(V_D=0.7V)=0.8mA$.

a. How much does the device conduct (find I_D) at V_D=0.8V? 0.6V? 0.5V?
V2-V1 = n*VT*ln(I2/I1) or I2 = I1*exp((V2-V1)/(nVT))

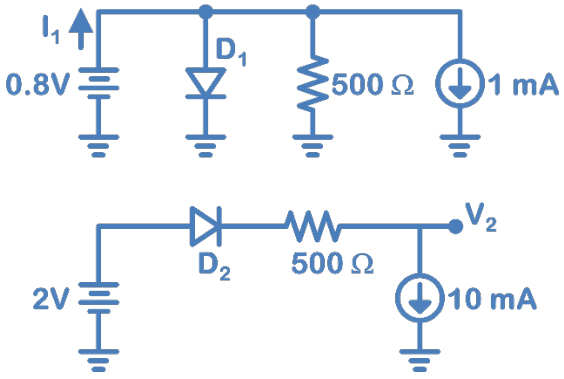
17.4mA, 0.0369mA, 0.0017mA

b. What voltage (find V_D) would produce a current of I_D=80uA? 8mA? 80mA?

0.6252V, 0.7748V, 0.8497V

3. Find the I1 and V1 in the following circuit. Use $I_S=7x10^{-13}$ A and n=1.5 for the diodes.

I1 = Is*exp(.8/nVT) + .8/500 + .001 = 3.9mA



V2 = 2 – n*VT*ln(.01/IS) – 500*.01 = -3.87V