

P 3.25, 3.41
from Smith + Dorf

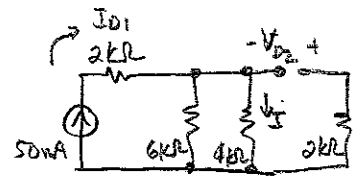
Engineering II
Electrical Circuit Analysis
Assignment 12 Solutions Cont.

LAM

P 3.25 Try D_1 on, D_2 off. Check this assumption after finding i, v .
By current $\div$, $I = \frac{6}{6+4} (50 \text{ mA}) = 30 \text{ mA}$

Chk. $V_{D2} = 0 - I(4k) = -120 \text{ V} < 0$ ✓
 $I_{D2} = 0$ ✓ $\Rightarrow$ off

$V_{D1} = 0$ ✓
 $I_{D1} = 50 \text{ mA} > 0 \Rightarrow$ on



P 3.41 a) Left C & diode clamp waveform to be > 0 . Right C & diode are a capacitor filter.

b) For $v_1 = V_m(0.5 + \sin \omega t)$, find v_2 & v_3 .

Left C charges to max negative $v_1 = V_m(0.5 - 1) = -\frac{V_m}{2}$

Right C charges to $v_1|_{\text{max pos}} + \frac{V_m}{2} = V_m(0.5 + 1) + \frac{V_m}{2} = 2V_m$.

$\therefore v_2 = v_1 + \frac{V_m}{2} = V_m(1 + \sin \omega t)$

$v_3 \approx 2V_m$

c. VM reads $70 \text{ V} \approx 2V_m \Rightarrow V_m \approx 35 \text{ V}$

