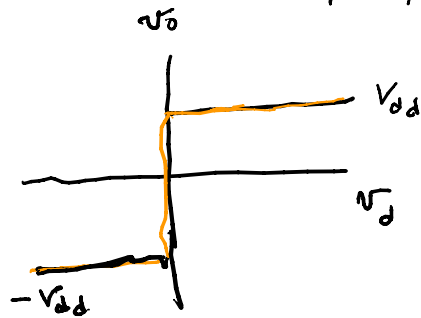
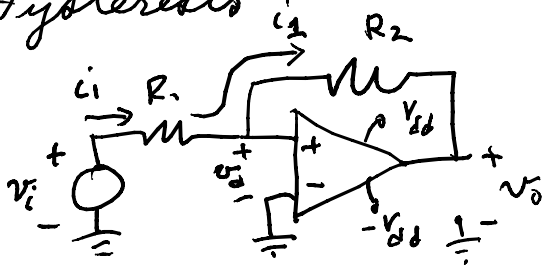


EE303  
10/09/08

Hysteresis



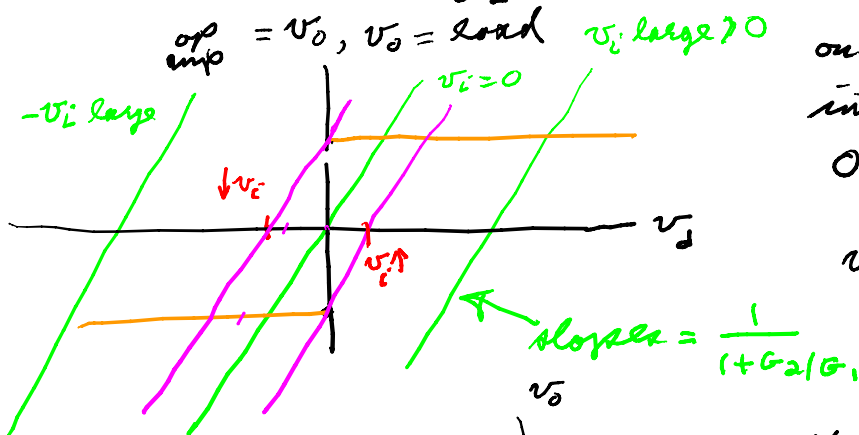
For the load line

$$G_1(v_i - v_d) = i_1 \quad R_1 = 1/G_1$$

$$R_1 = 1/G_1$$

$$i_2 = i_1 = G_2(v_d - v_o) \Rightarrow G_1(v_i - v_d) = G_2(v_d - v_o)$$

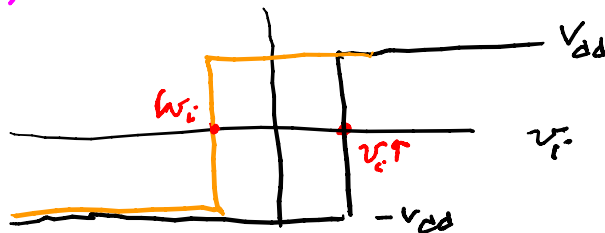
$$v_o = v_d + \frac{1}{G_2} (G_1 [v_d - v_i]) = \left(1 + \frac{G_1}{G_2}\right)v_d - \frac{G_1}{G_2}v_i$$



on  $v_d$  axis, the load line intersects at

$$0 = \left(1 + \frac{G_1}{G_2}\right)v_d - \frac{G_1}{G_2}v_i$$

$$v_d = \frac{G_1/G_2}{1 + G_1/G_2} \cdot v_i$$



To get the width, find  $v_i \uparrow$

$$-V_{dd} = \left(1 + \frac{G_1}{G_2}\right)v_d - \frac{G_1}{G_2}v_i \Big|_{v_d=0} = -v_i \cdot \frac{G_1}{G_2} \Rightarrow v_i \uparrow = V_{dd}$$

