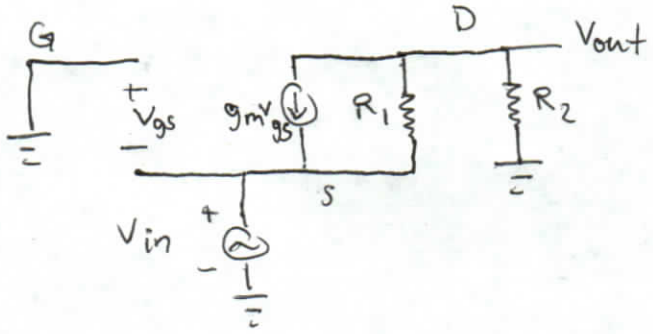
b.)



$V_{gs} = -V_{in}$

$$\frac{-V_{in} - V_{out}}{R_1} + g_m V_{in} - \frac{V_{out}}{R_2} = 0$$

$$-\frac{V_{in}}{R_1} - \frac{V_{out}}{R_1} + g_m V_{in} - \frac{V_{out}}{R_2} = 0$$

$$V_{in}\left(g_m - \frac{1}{R_1}\right) = V_{out}\left(\frac{1}{R_1} + \frac{1}{R_2}\right)$$

Assume: $\frac{1}{R_1} \ll g_m$

$$\frac{V_{out}}{V_{in}} = \frac{g_m}{\frac{1}{R_1} + \frac{1}{R_2}} = g_m(R_1 /\!/ R_2)$$