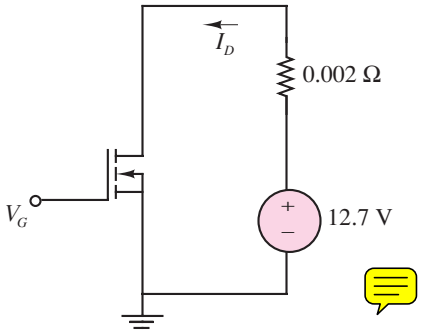

Figure P11.21

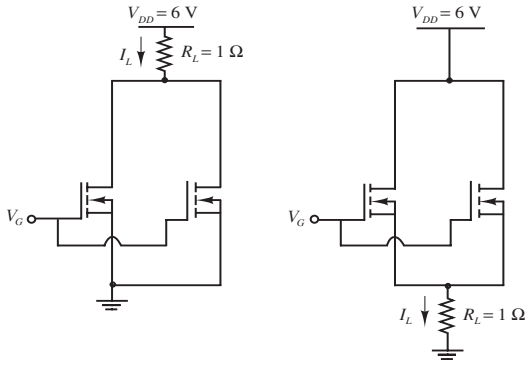

Figure P11.23

11.22 A precision voltage source can be created by driving the drain of a MOSFET. Figure P11.22 shows a circuit that will accomplish this function. With $I_{Ref} = 0.01$ A, determine the output V_G. Let $K = 0.006$ mA/V^2 and $V_T = 1.5$ V.

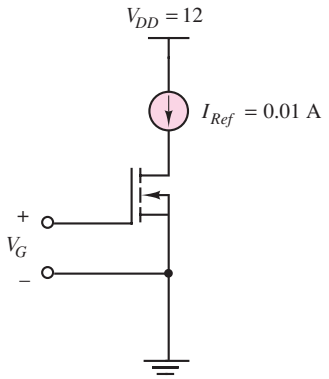

Figure P11.22

11.23 To allow more current in a MOSFET amplifier, several MOSFETs can be connected in parallel. Determine the load current in each of the circuits of Figure P11.23. Let $K = 0.2$ A/V^2 and $V_T = 3$ V.

11.24 A "push-pull amplifier" can be constructed from matched n-and-p-channel MOSFETs, as shown in Figure P11.24. Let $K_n = K_p = 0.5$ A/V^2, $V_{Tn} = +3$ V, $V_{Tp} = -3$ V and $V_{\text{in}} = 0.8\cos(1{,}000t)$ V.

Determine V_L and I_L.

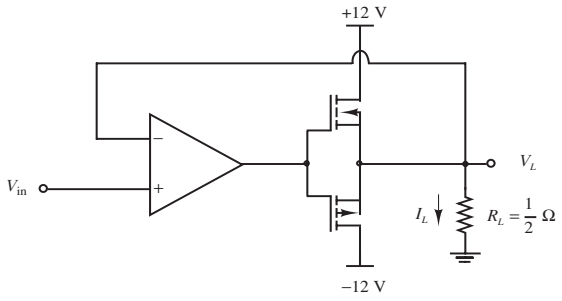

Figure P11.24

11.25 Determine the $V - I$ characteristics of the voltage controlled resistance shown in the circuit of Figure P11.25.

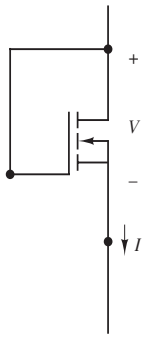

Figure P11.25

11.26 Determine V_L and I_L for the two-stage amplifier shown in the circuit of Figure P11.26, with identical MOSFETs having $K = 1$ A/V^2 and $V_T = 3$V, for

a. $V_G = 4$ V,

b. $V_G = 5$ V, and

c. $V_G = 4 + 0.1\cos(750t)$.