

Special Problem 4.5-1

In the **amplifier** below:

1. The transistor Q_1 is in **saturation**, with drain current $I_{ref} = 1.0\text{mA}$.
2. **None** of the three transistors are **identical**.

Determine then the proper value of:

- a) the DC gate voltage V_G and,
- b) the drain resistor R_D ,

so that the magnitude of an **undistorted, sinusoidal** small-signal output can be as large as possible (i.e., if $v_o(t) = V_s \sin \omega t$, then magnitude V_s can be as large as possible.).

Hint: This is a **DC bias problem**, no small-signal analysis is required!

