

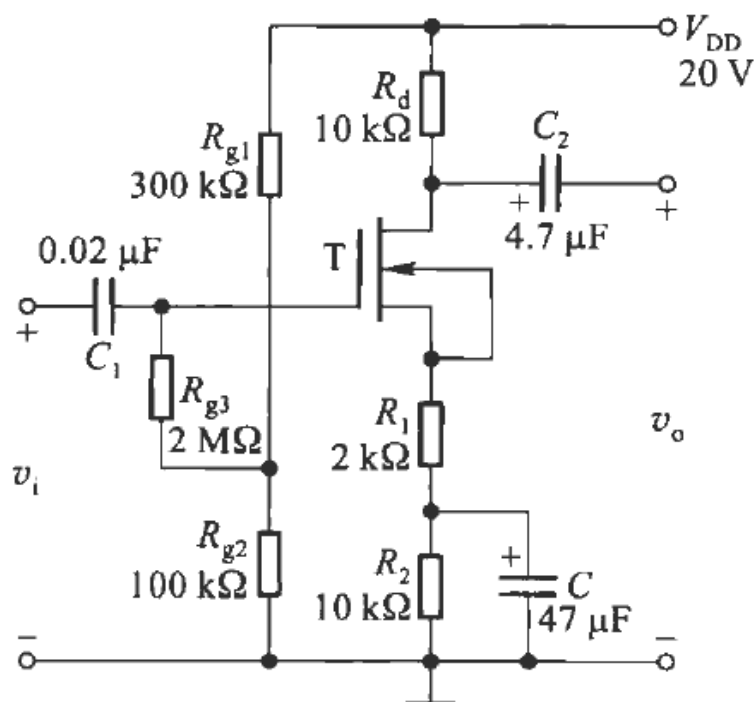
Homework for Chapter 4

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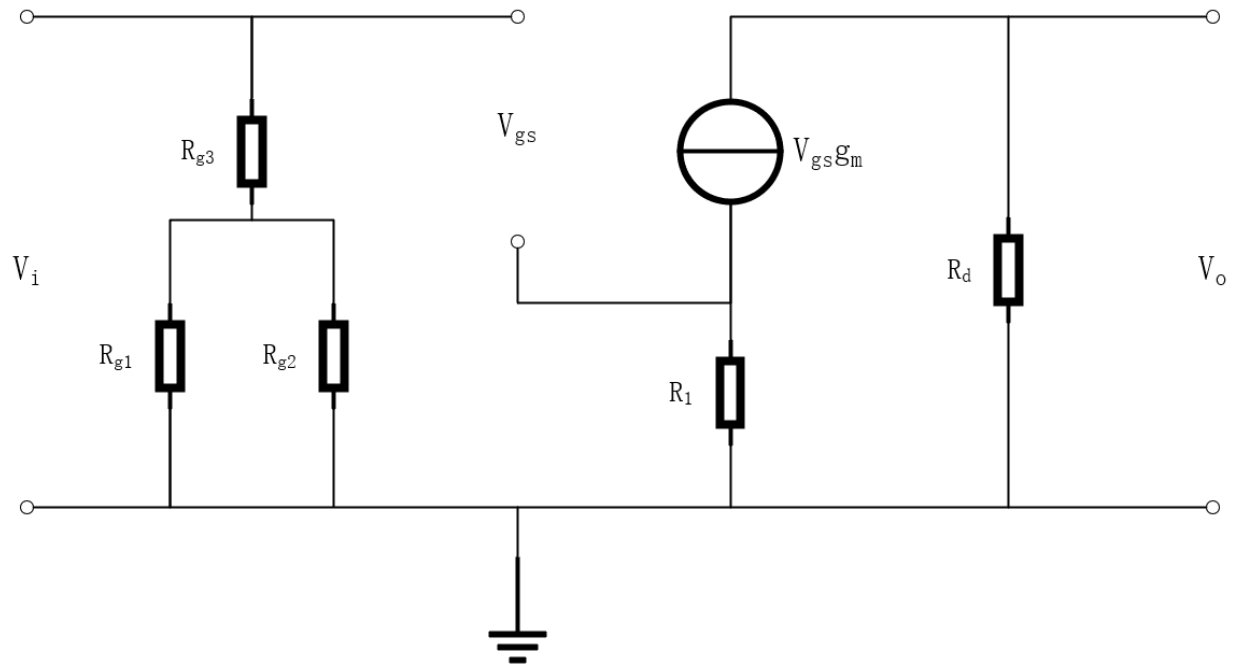
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4.4.3 已知电路参数如图题 4.4.3 所示, FET 工作点上的互导 $g_m = 1 \text{ mA/V}$, 设 $r_{ds} \gg R_d$ 。 (1) 画出电路的小信号等效电路; (2) 求电压增益 A_v ; (3) 求放大器的输入电阻 R_i 和输出电阻 R_o 。



图题 4.4.3

Problem 1 The circuit for small signal is shown below



Problem 2

$$A_v = \frac{V_o}{V_i} = \frac{-g_m V_{gs} R_d}{V_{gs} + g_m V_{gs} R_1} = -3.3$$

Problem 3

$$R_i = R_{g3} + \frac{R_{g1} R_{g2}}{R_{g1} + R_{g2}} = 2075 \text{ k}\Omega$$