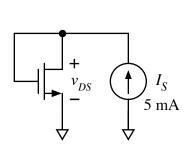
Name____

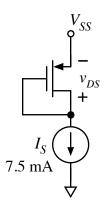
Find v_{DS} in each of the circuits shown below. The NMOS transistors have $V_{Tn} = 1 \text{ V}$ and $K_n = 0.5 \text{ mA/V}^2$. The PMOS transistors have $V_{Tp} = -1 \text{ V}$ and $K_p = 0.25 \text{ mA/V}^2$



 $V_{DD} = 5 \text{ V}$ $R_{D} \ge 2 \text{ k}\Omega$ v_{DS} $R_{S} \ge 2 \text{ k}\Omega$ $V_{CS} = -5 \text{ V}$

 $v_{DS} =$

 $v_{DS} = \underline{\hspace{1cm}}$



 $V_{SS} = 4 \text{ V}$ R_{D} $1 \text{ k}\Omega$ V_{DS} + R_{S} $3 \text{ k}\Omega$ $V_{DD} = -4 \text{ V}$

 $v_{DS} = \underline{\hspace{1cm}}$

 $v_{DS} =$