ECE 3050 Analog Electronics Quiz 9
## October 21, 2009

Professor Leach   Name _____

Instructions. Print your name in the space above. Place a box around your answers. Points will be subtracted if you do not express each numerical answer as a decimal number and if you do not put a box around answers. **Honor Code Statement:** *I have neither given nor received help on this quiz.* Initials _____

1. The figure shows a JFET current source used as the tail supply for a diff amp. It is given that $V^- = -15\,\text{V}$, $\beta = 0.006\,\text{A}/\text{V}^2$, and $V_{TO} = -2.5\,\text{V}$. Use the equation $I_D = \beta\,(V_{GS} - V_{TO})^2$ to solve for the value of R_S for $I_D = 1.5\,\text{mA}$.
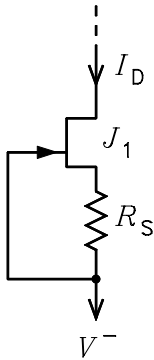
$$0.0015 = 0.006\,[-0.0015R_S - (-2.5)]^2 \qquad \Longrightarrow \qquad R_S = 1.333\,\text{k}\Omega$$

2. Shown is a schematic of the TL071 op amp. Circle each subcircuit and write in the circle what the stage is, e.g. current mirror, common base, etc. Note, the subcircuits can contain one or more transistors each. – This is in the class notes.