Exp #7 Prelab

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1. $V_p = V_1$ because the op-amp is in a feedback loop.

2. The current flowing through the V_1 node is given by the following expression:

$$\frac{-V_1}{820\Omega} + 0A + I_{load} = 0$$

Therefore,

$$I_{load} = \frac{V_1}{820\Omega}$$

3. The sensor voltage V_s is expressed by

$$V_s = I_{load} \cdot R_{sensor} = V_1 \cdot \frac{R_{sensor}}{820\Omega}$$

4.

$$A_0 = V_1 \cdot \frac{R_{sensor}}{820\Omega} + V_1 = V_1 \cdot \left(1 + \frac{R_{sensor}}{820\Omega}\right)$$

$$R_{sensor} = 820\Omega \cdot \left(\frac{A_0}{V_1} - 1\right)$$