Objectives
- Understand operation of a first order circuit
- Apply the voltage divider relationship to solving a circuit problem

1) Do problem 1.4 in the textbook. This is based on the response of a first order system, i.e. instrument (see pates 28-32). Also, see my class notes posted on the class web page. Closely related is the idea of a first order filter. See the notes on filters posted on the class web page (the equations in this reference are in terms of frequency in hertz rather than in radians)

2) Do problem 1.8 in the textbook.

3) The circuit shown below is useful when there is a senor that is basically a resistor (the resistor in the dashed circle) that changes value a small amount due to a change in its dimensions or the environment around it.

When the change in resistance is small, the change in voltage V2 will be small. To measure a change in V2 with respect to ground (V2 is the voltage across R4) requires a voltmeter with high precision (precision as defined in our text). However, assuming that the ratio R1/R2 is nearly the same as R3/R4 then a meter with low precision but high sensitivity can be used.

Write an expression for Vo in terms of V, R1, R2, R3, and R4+∇R. (recall the voltage divider relationship).

$Vo = (V2-V1)$