## Student handout

1. The voltage $V$ (in volts) across a circuit is given by $V = IR$ (Ohm's Law), where $I$ is the current (in amps) flowing through the circuit and $R$ is the resistance (in ohms). If we place two circuits, with resistance $R_1$ and $R_2$, in parallel, then their combined resistance $R$ is given by

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

Suppose the current is 2 amps and increasing at $10^{-2}$ amp/sec and $R_1$ is 3 ohms and increasing at 0.5 ohm/sec, while $R_2$ is 5 ohms and decreasing at 0.1 ohm/sec. Calculate the rate at which the voltage is changing.