

Chapter 6, Solution 72.

The output of the first op amp is

$$v_i = -\frac{1}{RC} \int v_i dt = -\frac{1}{10 \times 10^3 \times 2 \times 10^{-6}} \int_0^t v_i dt = -\frac{100t}{2}$$
$$= -50t$$

$$v_o = -\frac{1}{RC} \int v_i dt = -\frac{1}{20 \times 10^3 \times 0.5 \times 10^{-6}} \int_0^t (-50t) dt$$
$$= 2500t^2$$

At $t = 1.5\text{ms}$,

$$v_o = 2500(1.5)^2 \times 10^{-6} = \mathbf{5.625 \text{ mV}}$$