**EE 201 — HW 1.1** Name_____

Charge is flowing past a point in a wire. The expressions below describe the total amount of charge that has flowed the point as a function of time for several different situations. For each case, find the corresponding currents at time $t = 0.5$ s.

a) $Q(t) = (0.1\,\text{C/s})\,t + 0.2\,\text{C}$ ; $i =$ _____

b) $Q(t) = \left(5\,\text{C/s}^2 \cdot\right) t^2 - (2\,\text{C/s}) \cdot t + 6\,\text{C}$: $i =$ _____

c) $Q(t) = (8\,\text{mC}) \cdot \exp\left(\dfrac{-t}{1\,\text{s}}\right) - (3\,\text{mC}) \cdot \exp\left(\dfrac{-t}{0.25\,\text{s}}\right)$: $i =$ _____

d) $Q(t) = \left(50\,\text{mC}\right) \cdot \sin\left(\dfrac{2\pi}{2\,\text{s}}t\right)$: $i =$ _____

e) $Q(t) = \left(0.5\,\text{mC/s}\right) \cdot t \cdot \cos\left(\dfrac{2\pi}{4\,\text{s}}t\right)$: $i =$ _____

*Write your answers — and whatever work will fit — on this sheet. Staple any sheets with additional work behind.*