EE 201 — HW 1-1 Name_____

The total amount of charge that has flowed past a specific point in a wire as a function of time for different situations is given by expressions below. Find the corresponding currents at the specified time.

a) $Q(t) = (0.1\,\text{C/s})\,t + 0.2\,\text{C}$; $i(t = 0.5\text{ s}) =$ _____

b) $Q(t) = \left(5\,\text{C/s}^2\right)t^2 - 2\ (\text{C/s})\,t + 6\,\text{C}$: $i(t = 0.5\text{ s}) =$ _____

c) $Q(t) = (8\,\text{mC})\exp\left(\dfrac{-t}{1\,\text{s}}\right) - (3\,\text{mC})\exp\left(\dfrac{-t}{0.25\,\text{s}}\right)$: $i(t = 0.5\text{ s}) =$ _____

d) $Q(t) = \left(50\,\text{mC}\right)\sin\left(\dfrac{2\pi}{2\,\text{s}}t\right)$: $i(t = 0.5\text{ s}) =$ _____

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

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