1. Solution to the in-class problem: Use Euler’s method to approximate $I(1)$ for the initial value problem

$$\frac{dI}{dt} = 5 - 2I, \quad I(0) = 0$$

with step size $h = 0.2$.

Our initial condition tells us that $t_0 = 0, I_0 = 0$. Adding $h$, we get $t_1 = 0.2$ and

$$I_1 = 0 + 0.2(5 - 2(0)) = 1.$$  

Continuing, we get $t_2 = 0.4$ with

$$I_2 = 1 + 0.2(5 - 2(1)) = 1.6,$$

then $t_3 = 0.6$ with

$$I_3 = 1.6 + 0.2(5 - 2(1.6)) = 1.96,$$

then $t_4 = 0.8$ with

$$I_4 = 1.96 + 0.2(5 - 2(1.96)) = 2.176.$$

Finally, our last step gives $t_5 = 1$ with

$$I_5 = 2.176 + 0.2(5 - 2(2.176)) = 2.3056.$$  

Thus, $I(1) \approx 2.3056$. Your answer should not be rounded in this example.