

Problem-5

$$\begin{aligned}v &= \frac{gm}{c}(1 - e^{-(c/m)t}) \\ \Rightarrow v &= \frac{9.81 * 80}{10}(1 - e^{-t/8}) \\ v &= 78.48(1 - e^{-t/8}) \\ \frac{d^4v}{dt^4} &= \frac{78.48}{4096}e^{-t/8} = 0.01916e^{-t/8} \\ |\varepsilon_a| &< 0.1/100\end{aligned}$$

Output

```
>> simpson(8, 0, 10e-3)
```

```
ans =
```

```
2.281521178933738e+02
```

```
>> T5_20110065(8, 0, 10e-3)
```

```
ans =
```

```
2.281521178933738e+02
```

228.2 m