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ME EN 273 Sec 4
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Homework 8

Solution. For the first 4 points (1-4) or 3 segments we will use Simpson's 3/8 rule because we have an even number of points and an odd number of segments. We also get $h_1 = (4-1)/3 = 1$. So we get

$$\frac{3}{8}\left[2.3 + (3 \times 3.6) + (3 \times -0.5) + 2.9\right] = 5.4375$$

For the next segment from 4-6 we will we use the trapezoidal rule where $h_2 = 6 - 4/1 = 2$

$$\frac{2}{2}[2.9 + 5.6] = 8.5$$

Next we use Simpson's 1/3 rule we get $h_3 = 9 - 6/3 = 1$ which gives us

$$\frac{3}{8}[5.6 + (3 \times 2.8) + (3 \times 2.8) + 2.9] = 9.4875$$

And finally for the last section we use the trapezoidal rule again $h_4 = 11 - 9/1 = 2$ which gives us

$$\frac{2}{2}[2.9 + 3] = 5.9$$

Adding up all the results we have

$$I \cong 5.9 + 5.2875 + 8.5 + 5.4375 = 29.325$$

□

The next two questions I wrote a c++ program for and executed that, the code and input-output are in the google drive folder as well.