Question 1: Open the file `temperature_data.csv`.

- **Part A**: Using linear interpolation, find the temperature at hour 12.14
- **Part B**: Using cubic interpolation, find the temperature at hour 12.14
- **Part C**: Find the average temperature between the 5th and 10th hour by computing $\bar{T} = \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} T(t)dt$ using the cubic interpolation function where t_1 and t_2 are the beginning and end times.

Question 2: This question concerns the data examined in Examples 1 and 2 of the `Interpolation.ipynb` notebook. In particular, $f(E)$ refers to the spectrum data from `photon_spectrum.csv` and $\mu(E)$ refers to the attenuation data from `lead_attenuation.csv`.

- **Part A**: The mean photon energy of the beam with spectrum $f(E)$ is given by $\bar{E} = \left(\int_\infty Ef(E)dE\right) / \left(\int_\infty f(E)dE\right)$. Using cubic interpolation, find the mean photon energy.
- **Part B**: The mean photon energy of the beam after passing through solid led of depth x is $\bar{E}(x) = \left(\int_\infty Ef(E)e^{-\mu(E)x}dE\right) / \left(\int_\infty f(E)e^{-\mu(E)x}dE\right)$. Using cubic interpolation, find the mean energy of the photons after passing through 2cm of lead.
- **Part C**: Plot $\bar{E}(x)$ as a function of x from $x = 0$cm to $x = 5$cm. (*Hint: Make use of the* `quad_vec` *function to evaluate the numerator and denominator integrals for many different values of x, then divide the numerator array by the denominator array*).