Homework 1:
Due date: 24th Jan 2023.

1. What is normal distribution ? What makes the outcome of many repeated measurement to follow the normal distribution ?
2. What do you understand by double refraction ?
3. Using any plotting software, plot the Planck's black body radiation at 4 different temperatures T = 200K, 1200K, 2200K, 5000K. Comment on the differences.
4. Prove that the intensity of the light (from summation of waves from two different paths) in an FTIR interferometer is $I = B \cos\frac{2\pi\delta}{\lambda}$. Where δ is the displacement of the movable mirror.
5. Write a short note on specular reflectance collection in FTIR. (This was not taught in class. It is an self-reading exercise)
6. Get the solar temperature. Calculate the radiation intensity at optical – infra-red wavelengths. Now compare this data to the solar spectrum measured on Earth's surface (say a standard AM1.5). Why do you think certain bands of wavelength have very low intensity in the measured solar spectrum ?

PS: The homework cannot be copied. We reserve the right to reject all similar submissions.