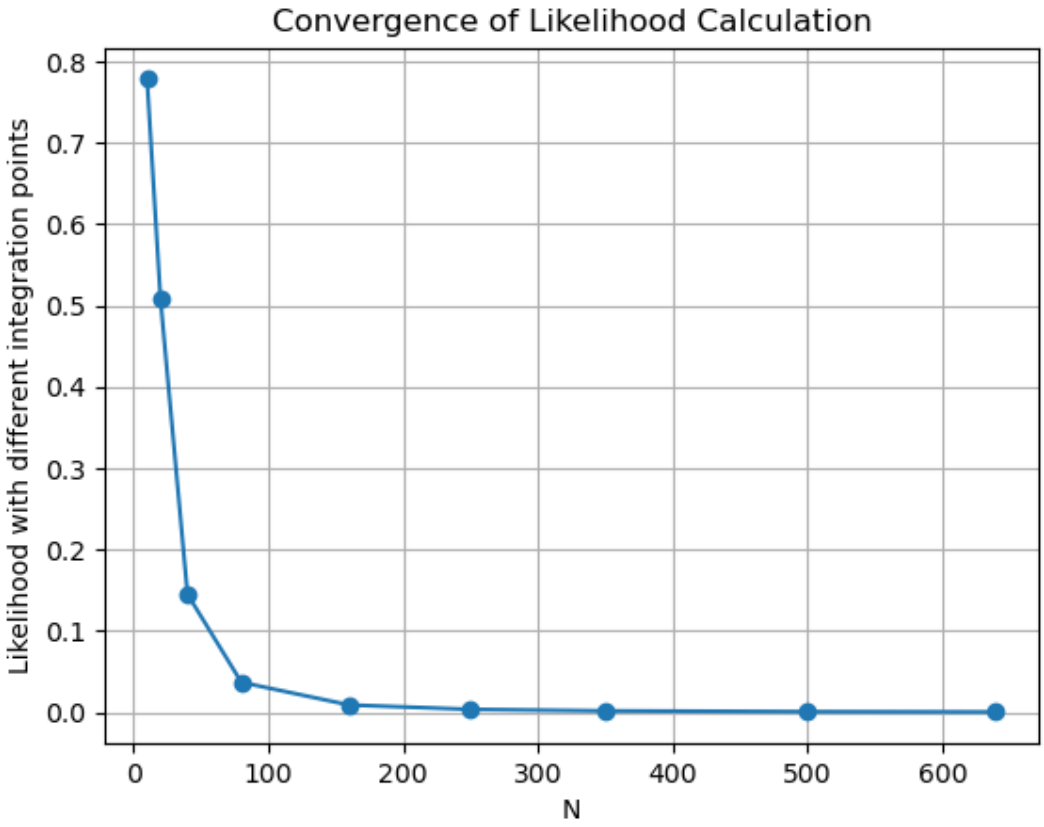
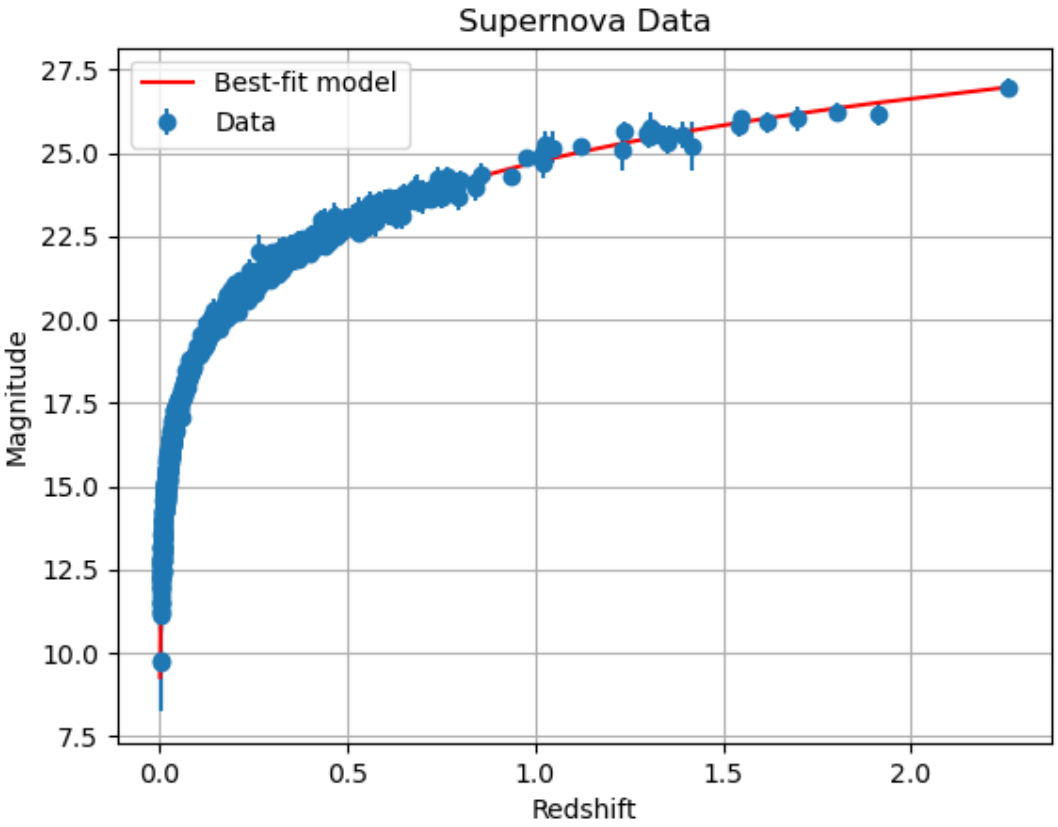
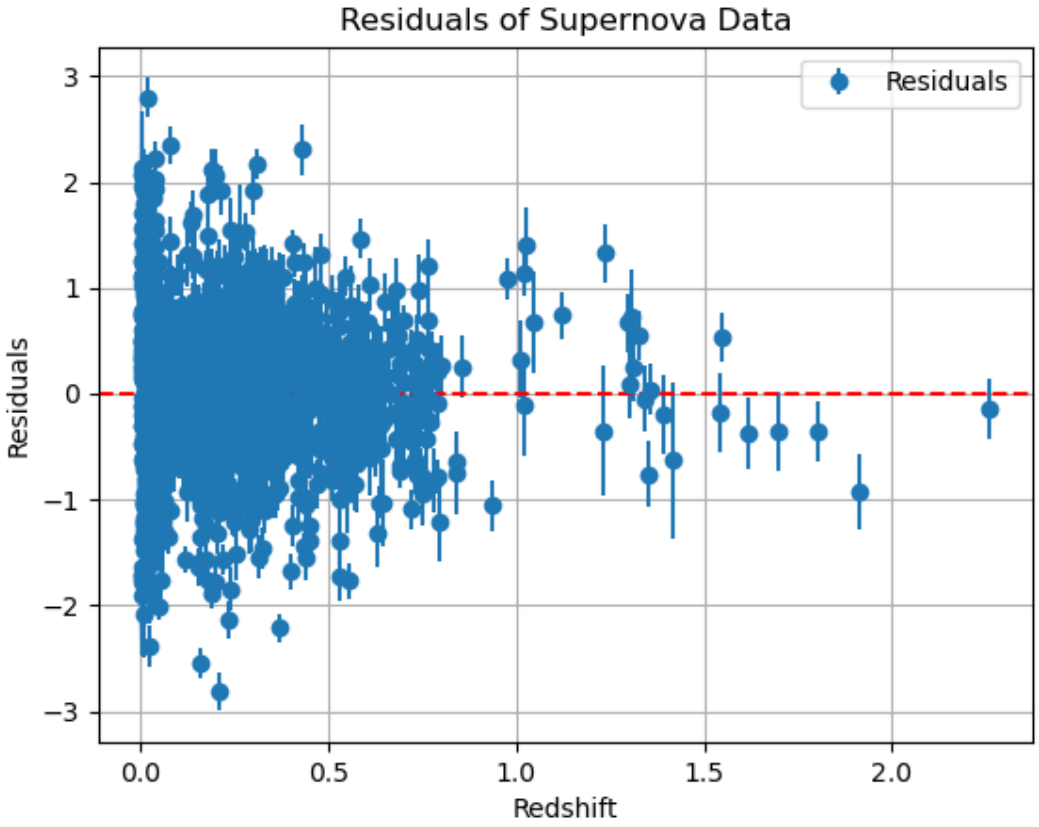


As you can see from the plot, after 350 data points of integration it becomes almost flat. (No huge difference after N>350). For this reason, N = 350 will be used afterwards.

Best fitting parameters: [0.26263902 0.46009182 70.5796759]

Optimized likelihood: -411.7976756327823


Supernova Data
Best-fit model
Data
Magnitude
Redshift
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
0.0
0.5
1.0
1.5
2.0


Residuals of Supernova Data
Residuals
Residuals
Redshift
3
2
1
0
−1
−2
−3
0.0
0.5
1.0
1.5
2.0

Optimized likelihood for theta 2: -422.0786320747652

Best-fitting parameters for theta 2: [0. 0. 69.48429793]

Having 0s for omega m and lambda means that the fractions of matter and dark energy in the universe are 0. This leads to omega k to be 1, which is the fraction of Einstein's curvature of space contributes to cosmic density. I think it is unrealistic since the fraction of matter is not 0. Given that the fraction of matter is about 0.3 and fraction of dark energy is roughly 0.7, it can be said that the first optimised parameters are better one. Moreover, as you can see the plot below the best fit model is a little bit off than the first best fit model.