The equilibrium sensitivity of the climate to a doubling of ,denoted is a critical uncertain parameter in the climate change problem

1a)

Briefly explain the procedure by which is normally calculated. (about 100 words please)

1b)

State and explain briefly three major physical (abiotic) feedback processes that affect the value of the equilibrium sensitivity to .

You should also Briefly explain, in GENERAL TERMS ONLY, why such feedbacks affect the value of . (About 300 words please!)

1c)

For a given increase in the predicted temperature increase at a given point in time (2100 say) will not depend solely on the equilibrium climate sensitivity. What additional process or processes are involved and how do they affect the atmospheric temperature.( About 100 words please!)

1d)

If the pre industrial atmosphere contained 560 giga-tonnnes of carbon (GtC) then according to the global warming potential value used by the IPCC, what mass of methane would be required to give a radiative forcing equivalent to a doubling of atmospheric ; ignoring any complicating feedback? Give your answer to two significant figures.

(\*\*\*When answering this question could you please set out calculations clearly explaining what you are doing in each step....I really need to understand how to do this!!)