A parallel plate Fabry-Perot cavity has a length of \( L \), and two mirrors with reflectivity, \( R \).

a) If one mirror is perfectly flat and the other has a roughness with an average height of \( \delta \), what is the maximum Finesse of the mirror? (2 points)

b) What if both mirrors are rough? (If you are going through lengthy calculations to get this part, you are doing it wrong.) (1 point)

c) How does the result you found in parts a) or b) affect the threshold gain needed to initiate lasing if the Fabry-Perot is filled with a solid-state material of gain \( g_{\text{th}} \) (with units of cm\(^{-1}\))? (1 point)