1) Given that the San Andreas fault is approximately 1200 km long, that the maximum slip in a single earthquake is approximately 5 m, and that the depth of the brittle zone in California is about 15 km:
   a) What is the seismic moment and moment magnitude of the largest conceivable California earthquake?
   b) Compare (a) to the moment of the Sumatra 2004 earthquake ($M_{\text{Sumatra}} = 1 \times 10^{23}$ N-m)
   c) How long would a San Andreas-type fault have to be to have a seismic moment equal to $M_{\text{Sumatra}}$? Is this conceivable?

2) Calculate the relative seismic energy radiated in P and S far-field waves for a point double-couple source by appropriately integrating and scaling the appropriate far-field double-couple radiation patterns. Would you conclude that earthquakes are better P or S wave sources? By what energy factor?