Question – Express Deflection & Shear Stress

From the relation

***T = Gθ***

***J L***

Obtain the equations for to express deflection and shear stress for a close coil helical spring carrying a load W. If the spring is made from 125mm diameter steel wire and has 10 coils at a mean diameter 250mm find

* 1. Its deflection at the free end
  2. Shear stress produced in the wire when the spring carries a load of 175N .

{take the modulus of rigidity as 80GN/m2 }