1. **Problem: Response Analysis of Elastoplastic Drucker-Prager Model**

Perform a response study when an associated Drucker-Prager formulation is subjected to equi-biaxial tension-compression in plane strain, i.e. \( \dot{\epsilon}_1 = -\dot{\epsilon}_3 \) with \( \epsilon_2 = 0 \). Calibrate the yield strength in terms of the uniaxial strength values, \( f_t = 0.6 \) ksi; \( f_c = 4.0 \) ksi, in tension and compression using the elastic properties \( E = 3,000 \) ksi, \( \nu = 0.2 \).

Parabolic Drucker-Prager Model:

\[
F = J_2 + \alpha I_1 - \tau_y^2 = 0
\]  
(1)

where \( I_1 = tr\sigma \) and \( J_2 = \frac{1}{2} s : s \). In this model the frictional and cohesive strength parameters are related to the strength values in uniaxial tension and compression as follows,

\[
\alpha = \frac{f_c - f_t}{3} \quad \text{and} \quad \tau_y^2 = \frac{f_c f_t}{3}
\]  
(2)

2. **Problem: Non-Associated Drucker-Prager Model**

Extend the associated Drucker-Prager model above to a non-associated format of pressure-insensitive plastic flow. Use the calibration above assuming that the dilatancy factor \( \alpha \) is zero in the plastic flow potential, i.e. \( Q = J_2 - \tau_y^2 = 0 \).

Implement this model in the triaxial constitutive driver above for strain control and compare the results of the non-associated D-P model with the associated case above.