1) \[ u_{x=L} = \frac{U_L}{L} \ln DR = \frac{1000 \text{ cm/sec}}{300 \text{ cm}} \ln (75) = 14.4 \text{ sec} \]

2) \[ \sigma_{max} = \sigma_{x=L} = 3 \mu u_{x=L} = 3 \left( 4000 \text{ dyn-sec/cm}^2 \right) 14.4 \text{ sec} = 1.72 \times 10^5 \text{ dyn/cm}^2 \]

3) \[ F = \pi R_L^2 \sigma_{max} = 3.14 \left( 5^{-3} \text{ cm} \right)^2 \left( 1.72 \times 10^5 \text{ dyn/cm}^2 \right) = 13.5 \text{ dyn} \]

4) Internal effects are of importance when:

\[ \frac{\mu L}{3 \mu \ln DR} = 1 \]

Assuming \( \rho = 1 \)

Rearranging, we find:

\[ L^* = \frac{3\mu \ln (DR)}{\mu L} = \frac{3 \left( 4000 \text{ dyn-sec/cm}^2 \right) \ln (75)}{1 \text{ psi/cm}^2 \left( 1000 \text{ cm/sec} \right)} \approx 51.8 \text{ cm} \]

5) Increasing the draw ratio would increase the modulus and tensile strength of the fiber. Doing so would likely make the fiber more brittle to impact. Decreasing the draw ratio could result in the onset of draw resonance.