6.39 For this problem, we are given two values of ε_T and σ_T, from which we are asked to calculate the true stress which produces a true plastic strain of 0.21. Employing Equation 6.19, we may set up two simultaneous equations with two unknowns (the unknowns being K and n), as

$$\log (60,000 \text{ psi}) = \log K + n \log (0.15)$$

$$\log (70,000 \text{ psi}) = \log K + n \log (0.25)$$

Solving for n from these two expressions yields

$$n = \frac{\log (60{,}000) - \log (70{,}000)}{\log (0.15) - \log (0.25)} = 0.302$$

and for K

$$\log K = 5.027 \text{ or } K = 10^{5.027} = 106{,}400 \text{ psi}$$

Thus, for $\varepsilon_T = 0.21$

$$\sigma_T = K (\varepsilon_T)^n = (106,400 \text{ psi})(0.21)^{0.302} = 66,400 \text{ psi} \quad (460 \text{ MPa})$$