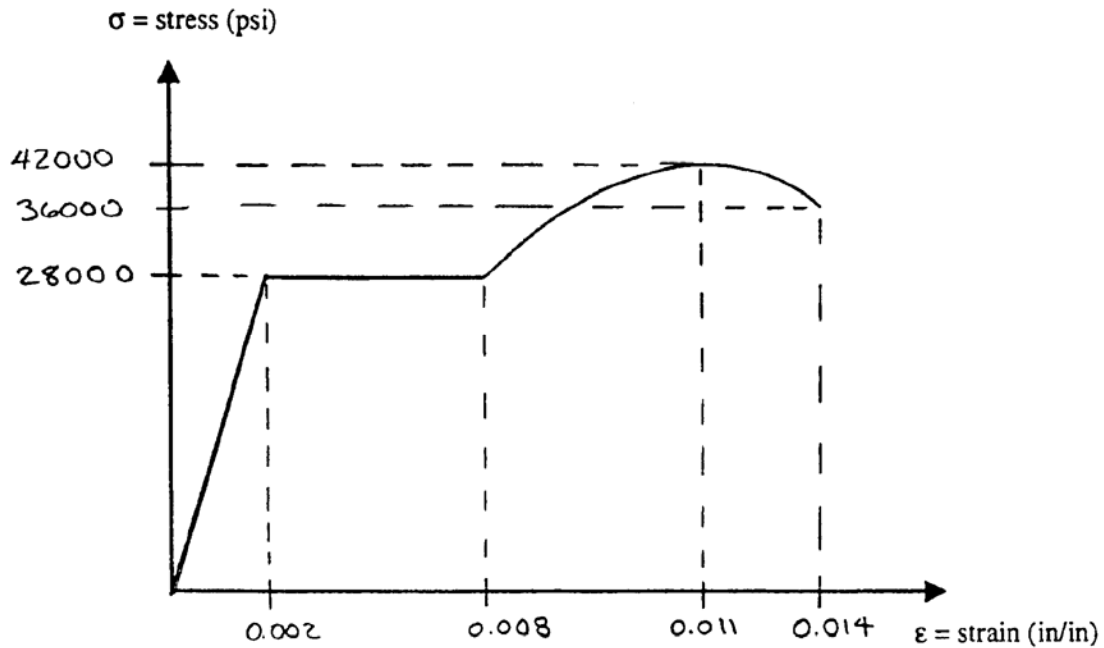


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1.) The tensile test of a metal specimen yielded the following stress-strain curve.



Fill in the following information.

- The yield stress of the material is _____ PSI
- The ultimate stress of the material is _____ PSI
- The Modulus of Elasticity is _____ PSI
- If an axial strain of 0.0015 in./in. induces a lateral strain of 0.0005, the value of Poisson ratio is _____

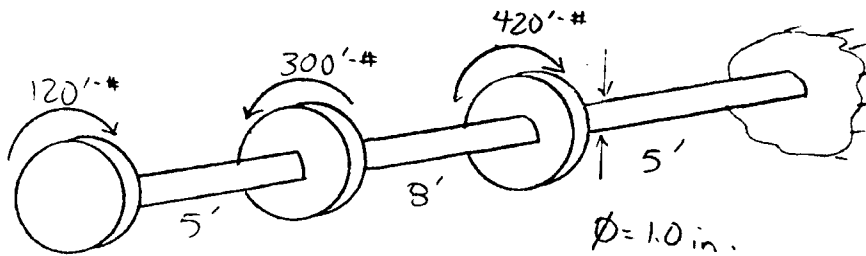
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2.) The A36 solid steel shaft, as shown, has a diameter of 1.0 in. If it has a fixed support at D, Determine:

- The maximum shear stress in member BC
- The magnitude and value of rotation of A with respect to C.

Note: $E = 30 \times 10^6$ psi

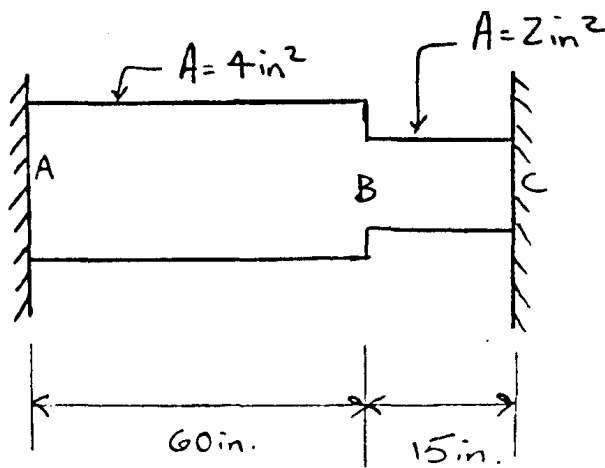
$G = 1 \times 10^6$ psi



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3.) The bar shown below is fastened at its ends to rigid walls and is free of stress at a temperature of 68°F . The modulus of elasticity is 30×10^6 psi and the coefficient of thermal expansion is 6×10^{-6} in/in/ $^{\circ}\text{F}$.

- a.) If the cross sectional areas of segment AB and BC are 4 and 2 square inches, respectively, determine the normal stress in AB and BC due to a rise in temperature to 108°F .



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4.) Determine the axial forces in members AC and DE of the structure shown below. Member AC has a diameter of 1.5 in and is made of A36 steel. Member DE is a Douglas Fir wood post. The moduli of elasticity of wood and steel are 1.5×10^6 psi and 30×10^6 psi, respectively.

