TOPIC

Strength of Materials – Section VIII – Question 4

QUESTION

A hollow cylinder of length $6''$, and inner and outer radii $1.5''$ and $3''$, respectively is twisted by a torque of 2000 lb-in. Given the shear modulus, G =11000 psi, Poisson's ratio, $\upsilon = 0.3333$, the angle of twist in degrees most nearly is

(A) 0.0873
(B) 0.524
(C) 1.048
(D) 1.397

HINT

Polar moment of area, $J = \frac{\pi}{2}(r_0^4 - r_i^4)$

The angle of twist, $\varphi = \frac{TL}{JG}$

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