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AM27: Strength Theory

1. The short concrete cylinder having a diameter of 50 mm is subjected to a torque of 500 N·m and an axial compressive force of 2 kN. Determine if it fails according to the maximum normal stress theory. The ultimate stress of the concrete is 28 MPa.



2. If a solid shaft having a diameter d is subjected to a torque T and moment M , show that by the maximum normal stress theory the maximum allowable principal stress is

$$\sigma_1 = \frac{16}{\pi d^3} \sqrt{M^2 + T^2}$$



