

A new jet engine is being tested in a wind tunnel. Air, with properties characteristic of U.S. Standard Atmosphere at 6000 m enters the engine at a velocity of 275 m/s through a circular intake port of radius 0.5 m. Fuel enters the engine at a mass flow rate of 2.5 kg/s. If the gas leaves the engine with an average velocity of 300 m/s through an exit port of radius 0.4 m, calculate the density of the exhaust gas.