

ET332a
Magnetic Circuits Homework

The solenoid shown in the figure below consists of a 500 turn coil on a uniformly sized core. The core has a cross-sectional area of $4 \times 10^{-4} \text{ m}^2$. The length of the air gap is $0.5 \times 10^{-2} \text{ m}$ long. Assume that the reluctance of the core is negligible, that the permeability of air is $4\pi \times 10^{-7} \text{ Wb/A-t-m}$, and that the current, I , is 10 A, find:

- a.) the magnetomotive force present
- b.) the reluctance of the entire magnetic circuit
- c.) the total magnetic flux that circulates
- d.) the magnetic flux density in the air gap
- e.) the magnetic field intensity in the air gap

