Special Problem 9-3.2

A single **square** loop of wire is centered at the origin, and lies **entirely on the *x-y* plane**. Each side of the square loop is **2 m** in length.

There is a current of **2 Amperes** flowing in this loop, which creates a magnetic flux density within the loop of approximately:

$$\mathbf{B}(\bar{r}) = \frac{\mu_0}{\left(z^2+1\right)}\hat{\mathbf{a}}_z \qquad W/m^2$$

A. Determine the total amount of **magnetic flux** passing through this loop.

B. Determine the **inductance** of this loop.