

Graph Work - Uncertainties

An experiment is carried out to calculate the value of the current using the following equation;

$$B = \frac{\mu_0 I}{2\pi r}$$

$\mu_0 = 4\pi \times 10^{-7} \text{ TmA}^{-1}$
 $B = \text{magnetic induction (T)}$
 $r = \text{radius of magnetic field (m)}$
 $I = \text{current (A)}$

Use the results from the table to:

- Determine the equation required to allow a graph to be plotted.
- Plot a graph of the results and include error bars.
- Plot a second graph and find the uncertainty in the gradient.

radius (m)	Magnetic induction 1 (T)	Magnetic induction 2 (T)	Magnetic induction 3 (T)	Average magnetic induction (T)
0.1	20.2	20.1	19.8	
0.2	17.3	17.5	17.6	
0.3	11.2	11.4	11.2	
0.4	7.6	8.0	7.9	
0.5	3.8	3.9	4.1	