

Part 1 - Magnetic Field around a straight wire

procedure and goal

We set up a power source, ammeter, and straight wire in series. We had a probe which could measure the magnetic field at any point in space. We completed two different experiments. In the first experiment we measured the magnetic field around the straight wire with a fixed distance but varying current. In the second experiment we measured the magnetic field around the straight wire with a fixed current but varying distance.

results

Table 1: With a fixed distance

I(amperes)	B(Gauss)
0.00	.041
1.00	.168
1.23	.217
1.51	.254
2.03	.320
2.23	.336
2.60	.369

Table 2: With fixed current

N(turns)	B(Gauss)	1/B(Gauss)
0	.318	3.144
2	.296	3.37
4	.283	3.53
6	.244	4.09
8	.223	4.48
10	.211	4.73
12	.188	5.31

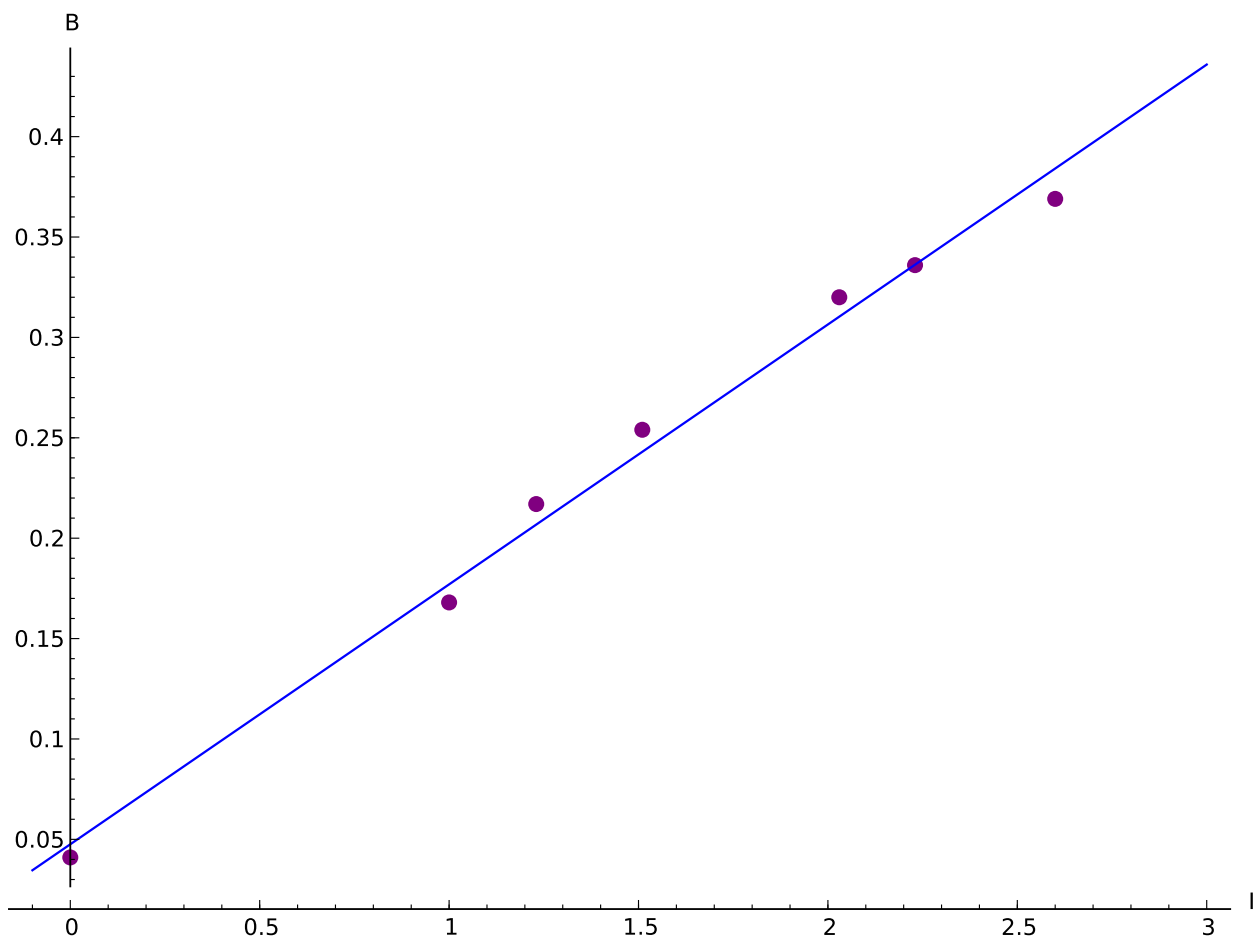


table 1 data: I vs B . Best fit line is $B = .129I + .047$

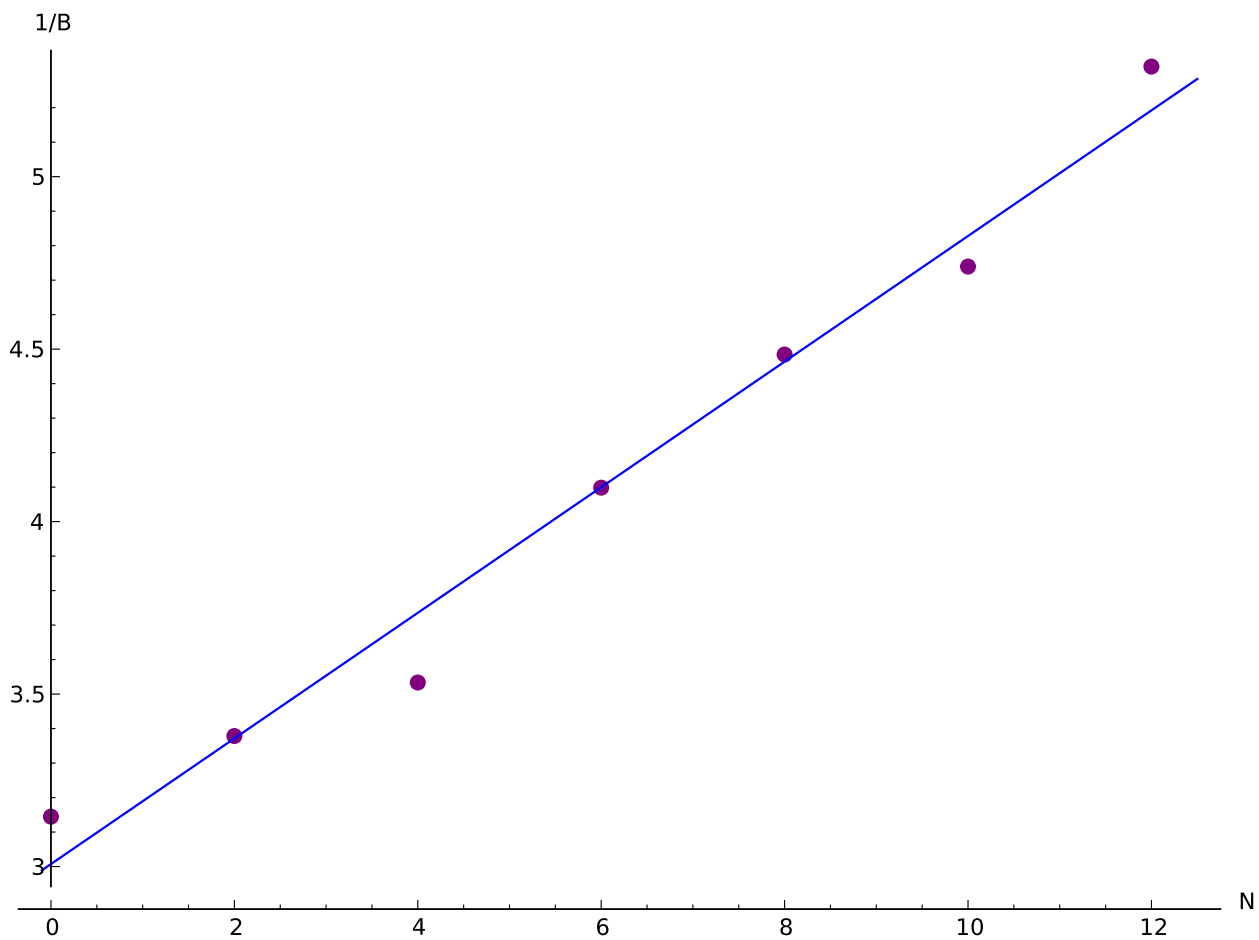


table 2 data: N vs $\frac{1}{B}$. Best fit Line is $\frac{1}{B} = .18N + 3$

analysis

part 2 - Magnetic Field around Magnet

procedure and goal

results

Table 3

D(cm)	B(Gauss)	1/B(Gauss)
2.5	1.41	.709
3.5	1.21	.826
4.5	.914	1.09
5.5	.274	3.64
6.5	.07	14.28

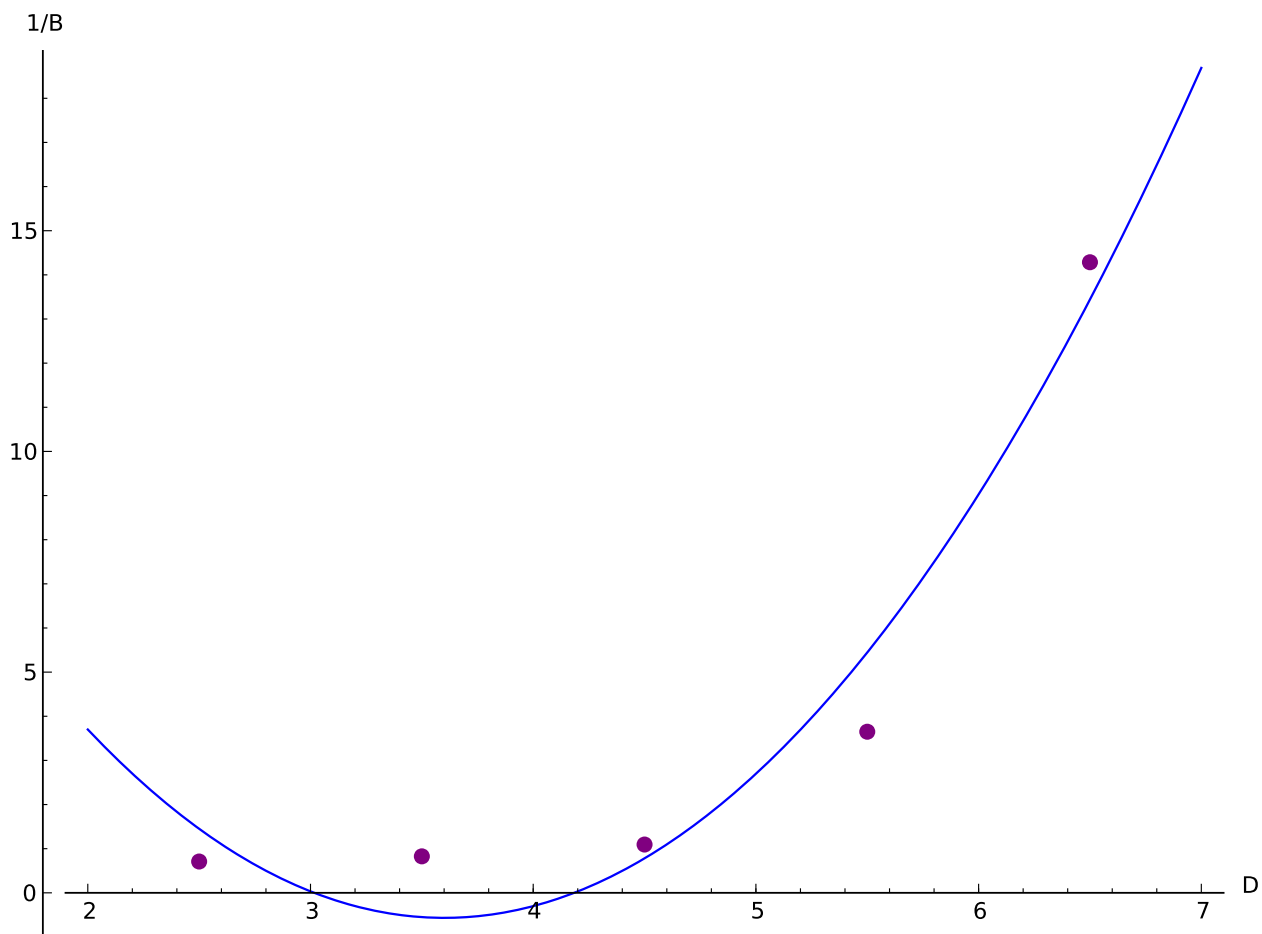


table 3 data: D vs $\frac{1}{B}$. Best fit quadratic was $\frac{1}{B} = 1.66D^2 - 11.99D + 21.03$

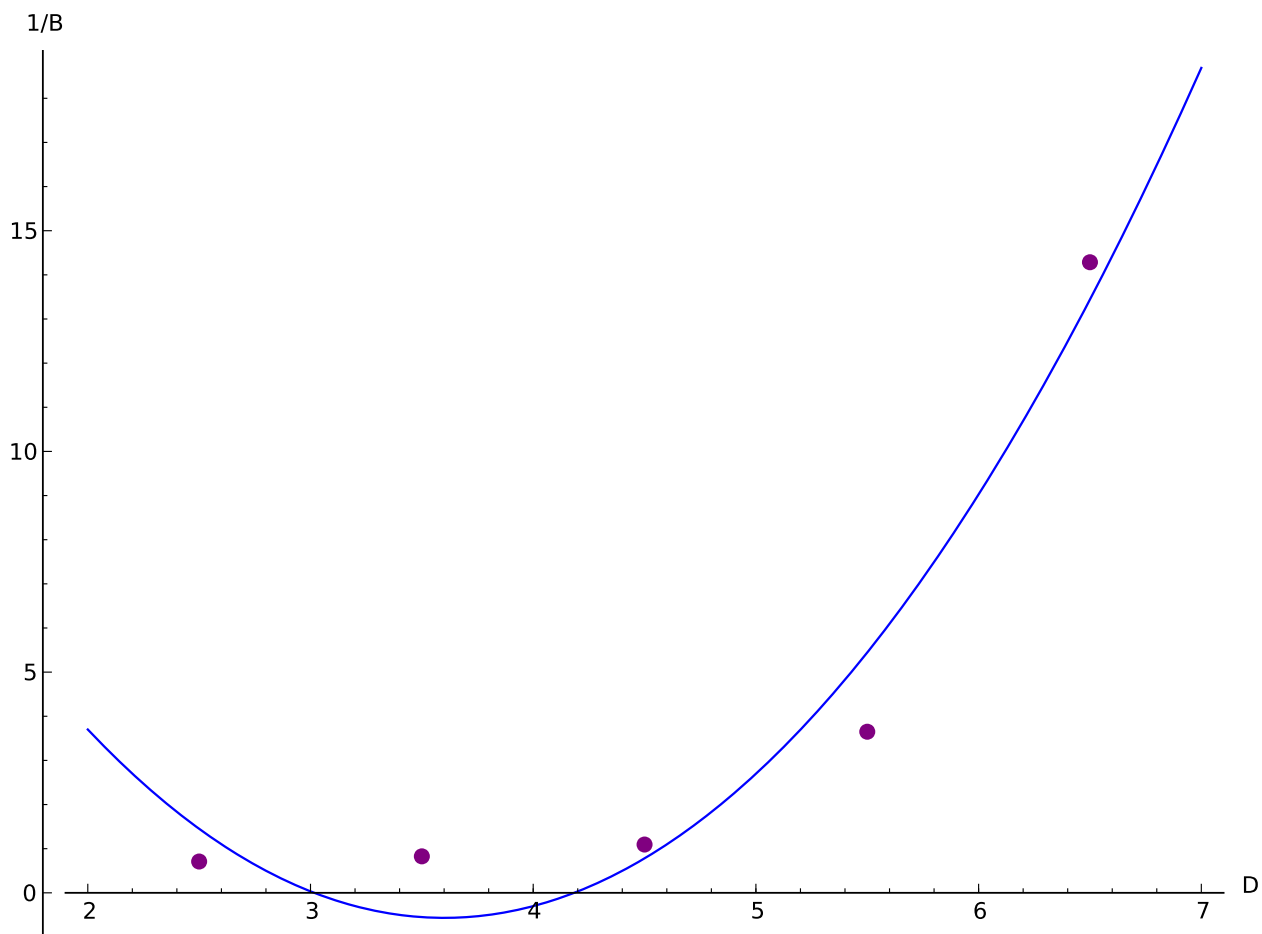


table 3 data: D vs $\frac{1}{B}$. Best fit cubic was $\frac{1}{B} = .066D^3 - 7.25D^2 + 25.9D - 29.07$

analysis