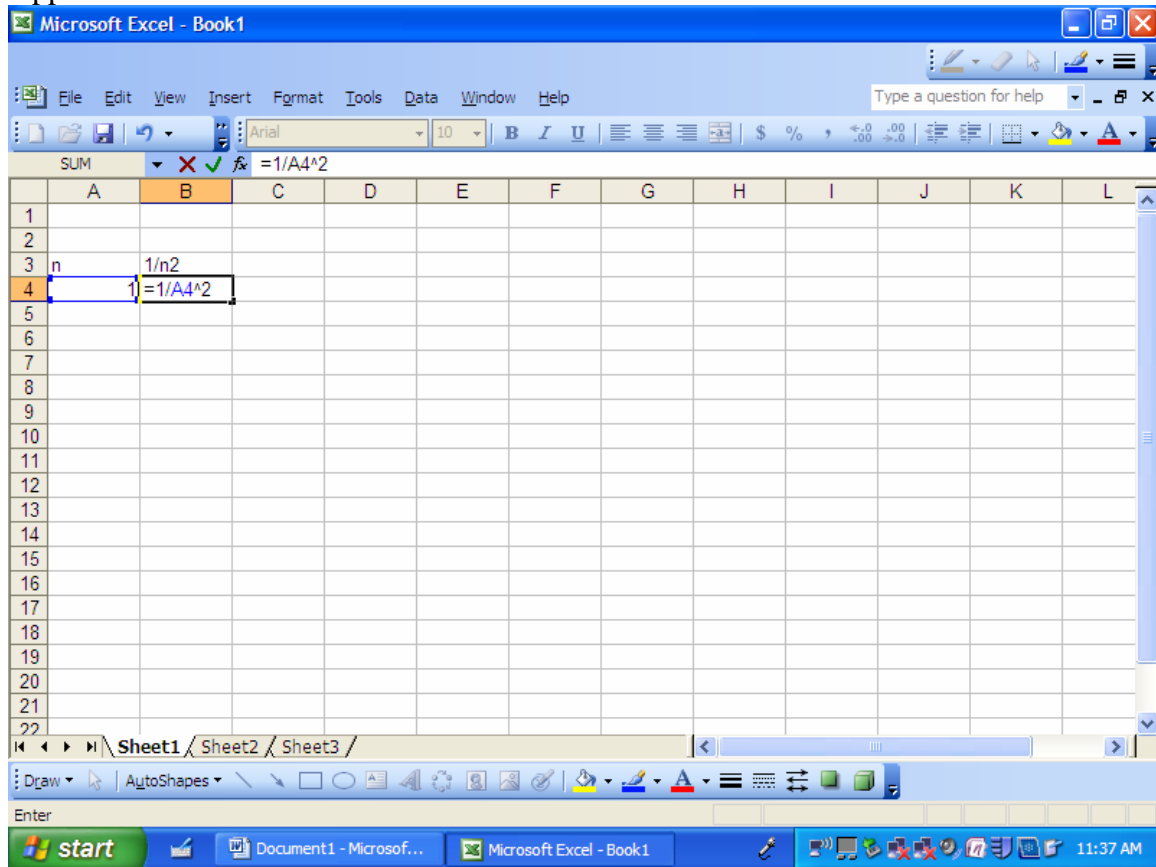


Approximate the infinite sum of $1/n^2$:



Create a formula and then do edit fill down to get a column of numbers
Now we copy the $1/n^2$ formula and fill down as well:

Microsoft Excel - Book1

File Edit View Insert Format Tools Data Window Help

Type a question for help

C6 =B6+C5

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3	n	1/n2	Total so far									
4	1	1	1									
5	2	0.25	1.25									
6	3	0.111111	1.361111									
7	4	0.0625	1.423611									
8	5	0.04	1.463611									
9	6	0.027778	1.491389									
10	7	0.020408	1.511797									
11	8	0.015625	1.527422									
12	9	0.012346	1.539768									
13	10	0.01	1.549768									
14	11	0.008264	1.558032									
15	12	0.006944	1.564977									
16	13	0.005917	1.570894									
17	14	0.005102	1.575996									
18	15	0.004444	1.58044									
19												
20												
21												
22												

Sheet1 Sheet2 Sheet3

Ready Sum=19.71881554

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Are we close enough to the “right” answer after 15 terms?

The answer is that we judge if we are close enough by the reasons for wanting an accurate answer.

Example: launching a missile/bomb. Accuracy depends on units. 1.58 ft, close enough after 15 steps.

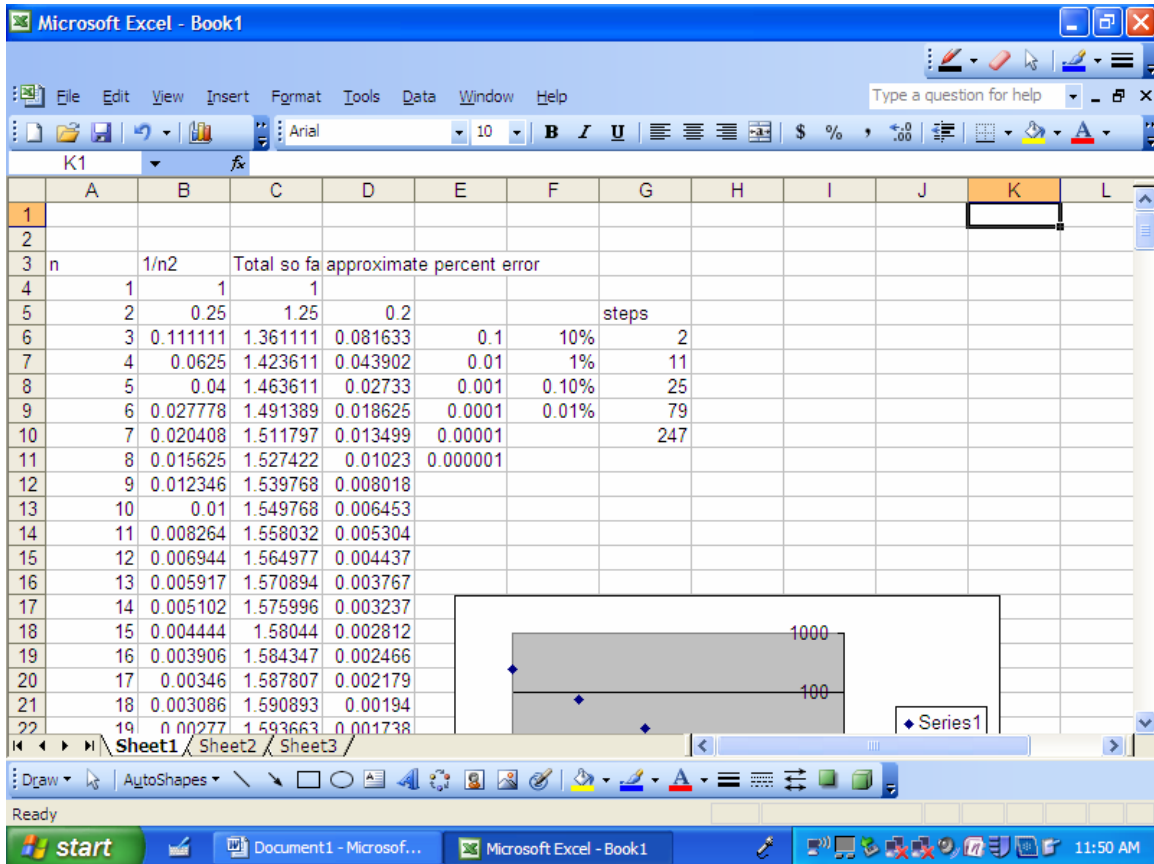
1.58 miles, maybe?

1.58 lightyears, no.

	A	B	C	D	E	F	G	H	I	J	K	L
229	226	1.96E-05	1.640519									
230	227	1.94E-05	1.640538									
231	228	1.92E-05	1.640558									
232	229	1.91E-05	1.640577									
233	230	1.89E-05	1.640596									
234	231	1.87E-05	1.640614									
235	232	1.86E-05	1.640633									
236	233	1.84E-05	1.640651									
237	234	1.83E-05	1.64067									
238	235	1.81E-05	1.640688									
239	236	1.8E-05	1.640706									
240	237	1.78E-05	1.640724									
241	238	1.77E-05	1.640741									
242	239	1.75E-05	1.640759									
243	240	1.74E-05	1.640776									
244	241	1.72E-05	1.640793									
245	242	1.71E-05	1.64081									
246	243	1.69E-05	1.640827									
247	244	1.68E-05	1.640844									
248	245	1.67E-05	1.640861									
249	246	1.65E-05	1.640877									

After 246 steps, our answer is still changing some.

Let's look at how error is changing as we get more stringent requirements:



IN a graphical form with log-log scales:

