Abbreviations: Bytes (B), Sectors (S), Tracks (T), Cylinders (C), Disk (D), Seconds (s), Milliseconds (ms)

Drive specifications for a Seagate Barracuda HDD:

- 7,200 RPM
- 512 B/S
- 63 S/T
- 1420 T/C
- 16,383 C/D
- Contiguous track seek time (CTST): 1.0 ms
- Ave. seek time: 10.0 ms

Questions:

1. What is the average rotational delay (ms)?
2. What is the maximum possible data r/w rate (B/s)? [B/T / (time for one rotation)]
3. What is the optimal count of sectors for track skewing to minimize the contiguous track seek rotational delay? [ceil((CTST / time for one rotation) * (S/T))]
    a. What is the contiguous track residual rotational delay after track skewing? (the time difference between applying the ceil() function and not)
4. What is the total capacity of this HDD (GB)?
5. How long would it take to sequentially r/w a 1.0 GB single-extent file where the sectors were formatted with optimal track skewing (s)?
6. How long would it take to r/w 1.0 GB of 4KiB records randomly located on the HDD (s)?
7. What is the ratio of 1.0 GB random r/w time to the 1.0 GB sequential r/w time for this HDD?

Submit:

Create a labeled MS Excel spreadsheet to compute the answers to these questions. Compare your answers to those of your other team members. If there are any significant differences, discuss with each other why, then correct if necessary. When satisfied, each team member will submit their spreadsheet to the appropriate D2L dropbox.