Errata for *Conquering the Physics GRE*, edition 3

July 10, 2021

This document contains corrections to *Conquering the Physics GRE*, edition 3. Feel free to contact us at physics@physicsgreprep.com if any of the information here is unclear.

1 Electricity and Magnetism

- §2.1.8, p. 42: The text below equation 2.16 should state that the potential $V(\mathbf{r}_i)$ is the potential due to all charges except the ith charge, evaluated at the location $\mathbf{r}_i$ of the ith charge.
- §2.3.3, p. 51: The final sentence of this section states that equation 2.47 follows from 2.32 and 2.35. It should instead state that 2.47 follows from equations 2.31 and 2.35.
- §2.4.1, p. 52: To maintain consistency with the notation introduced in equation 2.48, the subsequent (unnumbered) equation should read

$$\mathbf{p} = \sum_i q_i \mathbf{r}_i. \tag{1}$$

- §2.4.4, p. 53: The diagram for problem 2 should label the current as i rather than I, which is the moment of inertia. In addition, the current should flow in the direction opposite to that indicated. A corrected version is shown as Figure 1 below.
- §2.6.1, p. 55: Equation 2.64 is actually an alternate expression for the time-averaged Poynting vector $\langle \mathbf{S} \rangle$, not the instantaneous Poynting vector $\mathbf{S}$. In particular, the left-hand side of 2.64 should be $\langle \mathbf{S} \rangle$, and this expression should be moved after equation 2.66 and the introduction of the time-averaged Poynting vector.

2 Optics and Waves

- Figure 3.8, p. 70: The line in the diagram indicating the length of $d \sin\theta$ is slightly too long. A clearer replacement diagram is shown in Figure 2 below.

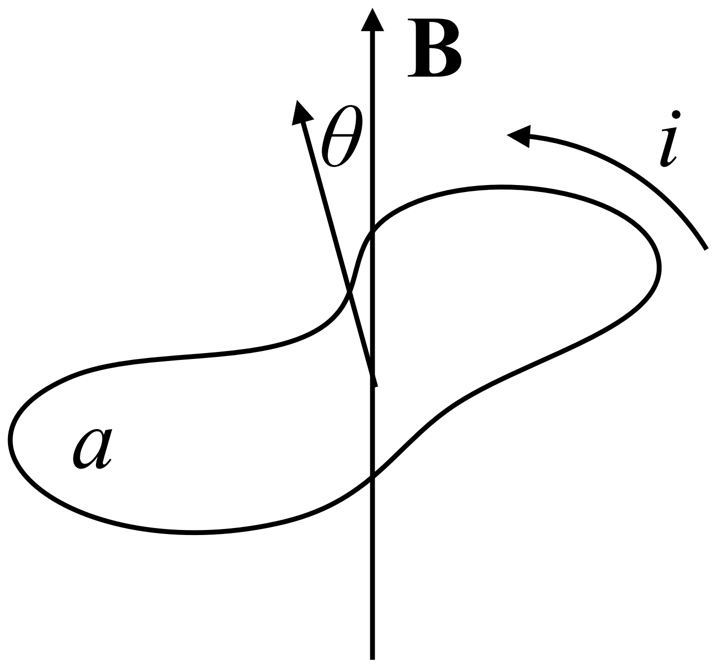

Figure 1: Corrected version of the figure for problem 2 in §2.4.4.

3 Quantum Mechanics

- Example 5.4, p. 111: In the final paragraph, the discussion of the $s = 0$, $m = 0$ state should read: "... since it has a different eigenvalue for $\hat{S}^2$ from the $s = 1$, $m = 0$ state..."

4 Special Relativity

- §6.3, p. 127: The last sentence of the introductory paragraph refers to "both books by Griffiths," which is ambiguous because Griffiths has written three, not two, introductory physics books. Replace this with "A careful treatment with many examples can be found in both Griffiths's book on electrodynamics as well as his text on elementary particles."

- §6.4.1, p. 129: In the second sentence of this section, the word "emitter" should be changed to "observer."

5 Laboratory Methods

- §7.1.2, p. 135: The x-intercept of a log-linear plot with logarithmic x axis should be $1/b$ in the notation of this section.

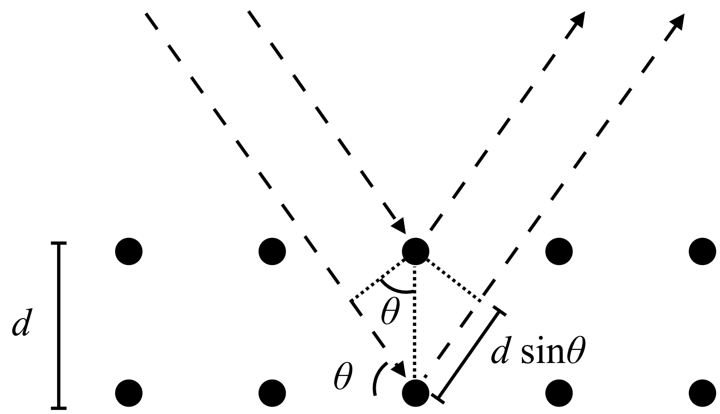

Figure 2: Replacement for Figure 3.8 indicating the correct length of $d \sin\theta$.

- §7.4.2, p. 140: The first sentence of the section on Compton scattering should read: "The photon scatters *in*elastically off an atomic electron..."

6 Specialized Topics

- Problem 13, p. 157: There are numerous errors in this problem, which cannot be salvaged by a single modification. Please skip this problem, and we will replace it in a future edition.

7 Sample Exam 1

- Problem 95, p. 186: The toroidal solenoid is meant to carry a current I, not R.

8 Sample Exam 2

- Problem 8, p. 190: The symbol for Fluorine is F not Fl.

9 Sample Exam 3

- Problem 8, p. 225: The diagram for problem 97 uses k to refer to the dielectric constant. This should instead be κ to match the notation in the problem text.

- Problem 65, p. 221: A cube has *eight* vertices, not six, so the problem should read "Eight charges $+q$ are fixed at the corners of a cube..."

10 Solutions to Sample Exam 1

- Problem 10, p. 231: The first equation in the solution has an erroneous coefficient of 1/2 in the RHS of the first equality. This equation should instead read:

$$I_{\text{disk}} = I_{\text{CM}} + MR^2 = \frac{1}{2}MR^2 + MR^2 = \frac{3}{2}MR^2.$$

11 Equation Index

- p. 272: There is a missing comma in the commutator of equation (5.15) (as reproduced in the index, but not in the main text). It should read: $[\hat{x}, \hat{p}] = i\hbar$.