ERRATA for *Introduction to Physics with Calculus*, Revised edition

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1. Page 18: First sentence on page 18 should read "...equations where the independent..."

2. Page 22: In the relations given just before section 1.10.3, The expression given for the fundemental theorem of calculus should read:

$$\int_a^b \frac{df}{dx} dx = F(b) - F(a) \ .$$

3. Page 24: Equation 1.19 should read:

$$\det(A) = \sum_{i \text{ or } j=1}^{N} A_{ij}(-1)^{i+j} M_{ij} \ .$$

4. Page 28: Problem 1.10 e), should include the statement: "a and b are constants"

5. Page 45, Problem 2.10, The first sentence of the problem statement should read, "A stone is dropped from some height d above a deep fresh water lake." The second sentence should read, "...will experience a deceleration of magnitude a_r given by..."

6. Page 76: Problem 4.7, Should read: "An airplane is traveling straight and level in the horizontal direction at a speed v_o when it fires a projectile straight ahead with an initial speed of v_p relative to the plane."

7. Page 76: Problem 4.7, the beginning section of the first sentence should read "An airplane is traveling level in the horizontal direction, in a straight line, at a height of 1.0 km above the ground at a speed of 525.0 mph..."

8. Page 77: The introductory section of Problem 4.11 should read "In the heliocentric model, the average Earth-Sun distance over a year defines a unit useful for denoting large distances. This unit for length is referred to as 1 astronomical unit or 1.0 A.U. = 1.50 $\times 10^{11}$ m."

9. Page 108: Problem 5.7, sentence should read "What minimum horizontal force is required to pull a 10.0 kg box across a flat surface..."

10. Page 109: Problem 5.12, should have the corrected phrase ", starting from rest on Earth,..." 11. Page 110: Problem 5.17, The first sentence in the problem description should read, "A 1000.0 kg car accelerates with a constant acceleration of magnitude 3.0 m/s^2."

12. Page 122: The sentence before Eq. (6.10) should read "Using Newton's law of gravity, where the attractive force points in the negative $\hat{r}$ direction, in Eq. (6.8) leads to"
Eq. (6.10) should then correctly read as

$$-\frac{GmM}{r^2}\hat{r} = -\hat{r}\frac{dU}{dr} \ .$$

Eq. (6.11) should then correctly read as

$$dU = \frac{GmM}{r^2}dr \ .$$

Eq. (6.12) should then correctly read as

$$\int_0^{U(r)} dU = -\int_\infty^r \frac{GmM}{r^2} dr \ .$$

13. Page 138: Example 7.2, the expression

$$100 = v_{1f} \cos 20^{\rm o} + v_{2f} \sin 45^{\rm o}$$

Should read

$$100 = v_{1f} \cos 20^{\rm o} + v_{2f} \cos 45^{\rm o}$$

14. Page 147, For clarity, insert before the last sentence in the paragraph before Eq. (7.16) the following sentence: "Assuming that the rocket is initially at rest with respect to some rest frame, we equate this zero momentum with the total momentum of this system at any later time after the engine is turned on."
After Eq. (7.16) add the sentence: "Eq. (7.16) is valid until such time that $m(t) = 0$, whereupon v_g and dm/dt immediately go to zero."

15. Page 178: The second from the last sentence in the paragraph before Eq. (8.34) should read, "Suppose that for some object, or collection of particles, the moment of inertia through its center of mass is known which we'll denote as I_o."

16. Page 151: Problem 7.14, A sentence in the problem description should read "...found to be moving at 1.5×10^5 m/s relative to the lab room."

17. Page 178: Example 8.12, The first sentence in the paragraph below Figure 8.19 should read: "From Table

8.1, we have that for an axis along its edge the moment of inertia is $(1/3)Mw^2$ where..."
Now, the final expression in Example 8.12 should read:

$$I_o = \frac{1}{3}Mw^2 - M\left(\frac{w}{2}\right)^2 = \frac{1}{12}Mw^2 \ .$$

18. Page 185: Problem 8.4, Should read: "...starting from rest..." and "...5.00 rad/s^2."

19. Page 185: Problem 8.10, should read "Two spheres of equal mass are attached..."

20. Page 186, Problem 8.12, A sentence in the problem description should read, "...along one of its long edges."

21. Page 187, Problem 8.17, The first sentence in the problem description should read "...square plate of mass 10.0 kg and..."
The first sentence in part b) of Problem 8.17 should read, "If the moment of inertia about an axis perpendicular to the plates center is $(1/6)mw^2$, where m is the plate mass, what is the angular acceleration..."

22. Page 206: Problem 9.21, First sentence should read, "For a "spaceship" to safely..."

23. Page 221: Second sentence at the top of the page should read, "...peak value must occur when the..."

24. Page 289: In the first paragraph, the second sentence should read, "a rug on a cool, dry day..."

25. Page 289: In the second paragraph, the fourth sen-

tence should read, "This led to the..."

26. Page 292: In Example 13.1, the second expression from the bottom should read

$$r_{32} = \sqrt{(0-4)^2 + (4-3)^2} = \sqrt{17} \;\; \text{mm} \; .$$

27. Page 293: The final four expressions of Example 13.1 should read as:

$|\vec{F}_{32}| = \frac{|q_3 q_2|}{4\pi\epsilon_o (r_{32})^2} = \frac{(9.0\times10^9)(5.0\times10^{-6})(10.0\times10^{-6})}{(\sqrt{17.0}\times10^{-3})^2} = 2.65 \times 10^4$ N ,

$|\vec{F}_{31}| = \frac{|q_3 q_1|}{4\pi\epsilon_o (r_{31})^2} = \frac{(9.0\times10^9)(10.0\times10^{-6})(10.0\times10^{-6})}{(\sqrt{13.0}\times10^{-3})^2} = 6.90 \times 10^4$ N .

$$\vec{F}_T = \left[2.65\left(\frac{-4}{\sqrt{17}}\right) + 6.90\left(\frac{3}{\sqrt{13}}\right)\right]\hat{\imath} + \left[2.65\left(\frac{1}{\sqrt{17}}\right) + 6.90\left(\frac{2}{\sqrt{13}}\right)\right]\hat{\jmath} \times 10^4 \text{ N} .$$

$$\vec{F}_T = 3.22\,\hat{\imath} + 4.46\,\hat{\jmath} \times 10^4 \text{ N}.$$

28. Page 295: Eq. (13.10) should read as

$$\vec{E} = \frac{\lambda z}{4\pi\epsilon_o} \int_{-l/2}^{l/2} \frac{dx}{(x^2+z^2)^{3/2}} \; \hat{\jmath} \; .$$

29. Page 296: Eq. (13.11) should read as

$$\vec{E} = \frac{\lambda}{4\pi\epsilon_o} \; \frac{x}{z(x^2+z^2)^{1/2}}\Bigg|_{-l/2}^{l/2} \; \hat{\jmath} = \frac{\lambda l}{4\pi\epsilon_o z\left[\left(\frac{l}{2}\right)^2+z^2\right]^{1/2}} \; \hat{\jmath} \; .$$

30. Page 296: The sentence before Eq. (13.12) should be replaced with, "Factoring z^2 out of the radical in Eq. (13.11), and ignoring the remaining term inside which is small at large z, leads to"

31. Page 322: The caption for Figure 13.21 should read, "Two point charges fixed..."

32. Page 325: Example 14.1, The expression in Example 14.1 should correctly read

$$n = \frac{8.9 \text{ g/cm}^3 (6.02 \times 10^{23} \text{ mol}^{-1})}{63.546 \text{ g/mol}} \simeq 8.4 \times 10^{22} \text{ cm}^{-3} .$$

33. Page 346: The caption to Figure 14.19 should read, "A DC circuit with five resistors."

34. Page 347: In the paragraph after Eq. (14.20) the last sentence should correctly read: "If there are N nodes in the circuit one can depend upon $N - 1$ of them yielding linearly independent equations."

35. Page 347: In the second paragraph on page 347 immediately after the sentence ending in "...equation for each unique loop." The additional sentence should be inserted: "Here unique means that the expression involves at least one element not in another voltage loop equation."

36. Page 372: The first sentence below the caption to Figure 15.8 should read, "From the nature of the electric field, we know that the..."

37. Page 394, The caption to Figure 16.3 should read, "Portrait of Michael Faraday (1791-1867), a British physicist who..."

38. Page 395, The caption to Figure 16.4 should read, "A time varying magnetic field passing..."

39. Page 422, Problem 16.17, The final sentence in the problem description should read, ”What minimum length of insulated wire is required?”

40. Page 436, The first sentence of section 17.3 should read, ”...magnetic fields act as a source of stored...”