

Corrections for Part II of Calculus in Context. Most of these involve the Problem Sets. They correct typos and errors and improve the wording and phrasing.

Chapter 7

Page 295. In the Mean Value Theorem, replace $f(b) - f(a) = f'(c)(a - b)$ by $f(b) - f(a) = f'(c)(b - a)$.

Page 321. Line 6 from the bottom: Example 4.7, not Example 4.6.

Page 328. Problem 7.21 is misnumbered: ii. is missing. Insert ii. $g(x) = x^{\frac{1}{2}} - 2x^{-\frac{1}{2}}$.

Page 328. Problem 7.22 iii. replace $g(t) =$ by $s = g(t) =$ and in Problem 7.22 iv. replace $h(x) =$ by $y = h(x) =$.

Page 330. The numbering in Problem 7.31 omits v. Put in v. $y = \cos^3 x^2$

Page 330. The numbering in Problem 7.32 repeats iii. Change the second iii to iv.

Page 331. Problem 7.38. Change the second sentence to: Illustrate the form $\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$ of the chain rule.

Page 331. Problem 7.44. In the last sentence delete “ f and g and also”

Page 331. Problem 7.45. Insert “ ≥ 0 ” at the very end of the problem (before the ?).

Page 333. The instructions for Problem 7.56 are better worded as follows: Replace “(b) the local maximum and minimum values of f ” by “(b) the values of the variable x at which f has a local maximum or a local minimum.”

Page 338. Problem 7.81. Replace “Problem 1.23” by “Problem 1.22”

Page 338. Problem 7.82. Replace $(\operatorname{sech} x)(2 \tanh^2 x)$ by $(\operatorname{sech} x)(2 \tanh^2 x - 1)$.

Page 338. Problem 7.84. Replace “symmetric about the x -axis” by “symmetric about the y -axis”.

Page 339. Problem 7.86. Graph (f) should not be broken and its tangent at $(0, 0)$ should have slope -2 .

Page 339. Problem 7.87. Insert “so that” after “all x except $x = 3$,”

Page 340. Problem 7.87 iii. It should be $g''(x) = \frac{-2}{(x+3)^2}$ and not $g''(x) = -\frac{-2}{(x+3)^2}$

Chapter 8

Page 353. At the end of Example 8.2 replace “72.26 pounds” by “78.26 pounds”

Page 377, line 4. Delete the ! in “*index!of refraction*”.

Page 390. In the second line replace “less that” by “less than”

Page 391. Problem 8.4. In the next to last line omit “the”. In the last line insert “of x_0 ” after “estimate”.

Page 392. Problem 8.11. In the fourth line replace \$39,476 by \$39,476,000

Page 394. Problem 8.19. Change “The edge of the platforms are at the same height, and they are separated by a distance of 20 m.” to “The platforms have the same height and their edges are 20 meters apart.”

Page 396. Problem 8.23. Replace $\frac{13}{16}$ by $\frac{14}{16}$.

Page 396. Problem 8.26. Change the parenthetical remark as follows: According to records of the Golden Gate Bridge Highway & Transportation District, San Francisco,

- before the structural modifications the tension in the main cables at the towers had been 54,000,000 pounds under dead load only and 64,100,000 pounds under dead plus live load.
- Page 397. Problem 8.29, third line replace “between $t = 0$ to $t = 10$ ” by “between $t = 0$ and $t = 10$ ”
- Page 397. Problem 8.30i. In line 3 it should read “ $[0, \frac{r}{2}]$, $[-\frac{r}{2}, \frac{r}{2}]$, and $[-\frac{r}{2}, 0]$, respectively.”
- Page 400. Problem 8.33iii. It should be “diameter” not “diameters”
- Page 403. In the first line insert “lens equation” after “aspheric”.
- Page 403. Problem 8.42iii. The “ X ” should be an “ x ”.
- Page 403. Problem 8.43vi. Delete “the right branch of”

Chapter 9

- Page 433. Example 9.18. No comma after “calculus”
- Page 466. Problem 9.16i. Change “ $x_4 = 2$ ” to “ $x_4 = 2\frac{1}{3}$ ”
- Page 467. Problem 9.21. In the last line replace $\sqrt{10}^3$ by $\sqrt{6}^3$ and 13.63 by 2.34.
- Page 471. Problem 9.40. Change “of $\cos x$, $(-\infty, \infty)$ for” to “of $\cos x$ over $(-\infty, \infty)$ for”
- Problem 9.41. Change “of $\sinh x$, $(-\infty, \infty)$ for” to “of $\sinh x$ over $(-\infty, \infty)$ for”
- Page 474. Problem 9.73. Insert three minus signs on the last line:
 $-\frac{1}{\sqrt{1-x^2}}$, $\cos^{-1} x = -\sin^{-1} x + C$ and $\cos^{-1} x = -\sin^{-1} x + \frac{\pi}{2}$.
- Page 475. Problem 9.77. The last line should have another parenthesis) after the last $(2c)^2$
- Page 476. Project 9.78. In line 3 insert “but” after “barrels,”
- Page 477. Problem 9.79ii. Delete “and the fact that $\theta = \tan^{-1} x$ ”
- Page 477. Problem 9.80ii. It should be $\ln$ not l .

Chapter 10

- Page 482. In line three from the bottom, the number 1,435,778 should be 1,435,773.
- Page 488. In the line before the volume formula for V_2 replace “when $x = c$, $u = R^2 - c^2$ ” by “when $x = s$, $u = R^2 - s^2$ ”
- Page 511. Mid-page: replace “from apoapsis to periapsis” by “from aphelion to perihelion”
- Page 512. Example 10.7 line 5: Replace “periapsis” by “perihelion”
- Page 524. Problem 10.2. in the last line insert “m” after “ $b = 14.3$ ”
- Pages 524 and 5.25. In order to avoid confusion with the use of the symbol a in Figure 10.3 and in the discussion on page 482, it would be better to use the symbol h in place of the a in Figure 10.38 and in Problems 10.2 and 10.3.
- Page 526. The line above Problem 10.7. Replace “its” by “the” and “location” by “situation”
- Page 528. Problem 10.14i. In the expression for $A(c)$ replace $\frac{c}{2}\sqrt{1-(\frac{c}{a})^2}$ by $\frac{ac}{2}\sqrt{1-(\frac{c}{a})^2}$.
- Page 533. Problem 10.32. In line three insert “are” after “Earth”
- Page 534. Problem 10.33ii. In line two delete “ $P =$ ”.
- Page 535. Problem 10.38. In line three replace “Then show that” by “Explore whether”.
Then insert at the end of line five: Start by studying $f(x) = x - \varepsilon \sin x - C$ for $x \geq 0$ with $C = \frac{2\pi t}{T}$ a positive constant. Show that $f(x)$ is an increasing function,

- that it is concave up over the intervals $(0, \pi), (2\pi, 3\pi), (4\pi, 5\pi), \dots$, and concave down over $(\pi, 2\pi), (3\pi, 4\pi), (5\pi, 6\pi), \dots$. Turn to the special case $\varepsilon = \frac{1}{2}$. Use <https://www.desmos.com/calculator> to graph $y = x - \frac{1}{2} \sin x$ and note that the graph of $f(x)$ is the downward shift of this graph by C units. Experiment with different values of $C = \frac{2\pi t}{T}$ and consider the assertions of Problems 7.91(i) and (ii).
- Page 535. Problem 10.39. Replace “It is apparent that” by “If it converges to a solution (note that this may or may not happen)”. Then delete: “(But the latter is simpler to apply.)”
- Page 538. Line 5 from the top. Delete “of” in “We’ll compute of”

Chapter 11

- Page 554, near the bottom. The centered line $y_i = y_0 + hF(x_{i-1}, y_{i-1})$ should read $y_i = y_{i-1} + hF(x_{i-1}, y_{i-1})$. In addition, to avoid possible confusion with derivatives, x'_1 and y'_1 are better written as $\bar{x}_1$ and $\bar{y}_1$.
- Page 607. Problem 11.30. Replace $6x^2 + 5 = 0$ by $6x^2 - 5 = 0$. (It was the intention to provide two “real” examples and conclude the problem with the two “complex” examples $x^2 + 1 = 0$ and $x^2 + 5 = 0$.)
- Page 607. Problem 11.33. In the first line delete “q =”.
- Page 608. In the third line it should read “three” not “four”.
- Page 609. Problem 11.45. Delete “Why is there a conflict with this description?”
- Page 612. Problem 11.52. The first line should read “where a is the semimajor axis and b is the semiminor axis.
- Page 613. Problem 11.55. Replace $a =$ and $\varepsilon =$ by $a \approx$ and $\varepsilon \approx$
- Page 613. Problem 11.56. Replace $\varepsilon =$ by $\varepsilon \approx$
- Page 618. Problem 11.66ii. Replace $\sqrt{\frac{m}{v}}$ by $\sqrt{\frac{m}{k}}$

Chapter 12

- Page 628. Line 4 from the bottom. Replace $\varepsilon = \frac{a}{c}$ by $\varepsilon = \frac{c}{a}$.
- Page 629. Line 4. The word “right” should be “right”.
- Page 643. First line. Replace “components of F ” by “components of the centripetal force”
- Page 650. Line 10 from the bottom. Delete “should” from “particles—should attract ...”
- Page 655. In the expression on line 7 from the bottom, $F_i = G \frac{mM_i}{c^2}$ should be $F_i \approx G \frac{mM_i}{c^2}$.
- Page 661. Problem 12.6. Add after the word constants: “with $c \neq 0$ ”.
- Page 663. Problem 12.19. The formula should be $\tan(\theta - \frac{3\pi}{4}) = \frac{\sin \theta + \cos \theta}{\cos \theta - \sin \theta}$ (no minus).
- Page 663. Problem 12.20i. Insert “or $\gamma = 0$ ” after “ $\gamma = \tan^{-1} \frac{f'(\theta)}{f(\theta)} + \frac{\pi}{2}$ ”
- Page 666. Problem 12.31. In the first line replace “ $0 \leq \theta < \pi$, lies on” by “is”.
- Page 668. Problem 12.39. In the last line replace the last period by a “?”
- Page 668. Three lines above Figure 12.42. Replace “their magnitudes are given by” by “they are given by”
- Page 669. Problem 12.43. Replace $F(t) = K \frac{m}{r(t)^2}$ by $F(t) = K \frac{m}{r(t)^3}$.