Errata for
Ordinary Differential Equations: A Systems Approach,
by Bruce P. Conrad

Corrections to Example 1.3.3 on page 20: The transmission coefficient should be $k = 0.2$ hour^{-1}, not 0.05 hour^{-1}, as printed. In detail, the numbers ± 0.05 should be replaced with ± 0.2 in the statement and solution of this example at each occurrence.

Location	**Change**	**To**
Page 15, lines −17	If the object is colder than the environment, its temperature will decrease, and ...	If the object is warmer than the environment, its temperature will decrease, and ...
Page 50, line 4	equation (i)	the ODE
Page 51, line 11	equation (ii)	the ODE
Page 113, line 5	$y = Ce^{2t}$	$x = Ce^{2t}$
Page 124, Exercise 14	...an stationary point.	...a stationary point.
Page 144, Exercise 5	$x(0) = 1$	$x(0) = 2$
Page 147, last line	$m = \frac{k}{h}n$ and $p = \frac{k}{h}q$	$m = -\frac{k}{h}n$ and $p = -\frac{k}{h}q$
Page 148, second line	$\frac{k}{h}nq - \frac{k}{h}qn$	$-\frac{k}{h}nq + \frac{k}{h}qn$
Page 168, line −2	$\begin{bmatrix} d/\det(P) & -b/\det(P) \\ -c/\det(P) & a/\det(P) \end{bmatrix}$	$\begin{bmatrix} d/\det(P) & -c/\det(P) \\ -b/\det(P) & a/\det(P) \end{bmatrix}$
Page 200, last line	for purposes	for other purposes
Page 218, Ex. 23(a)	Last term in formula should be multiplied by t^{p-2}.	
Page 256 line −7	$\frac{1}{\sqrt{t}}e^{-st}$	$\frac{1}{\sqrt{t}}e^{-st} < \frac{1}{\sqrt{t}}$
Page 294, missing caption	Caption of Fig. 6.15: In this circuit, the capacitance is $C = 0.001$ farad, the inductance is $L = 0.1$ henry, and there is no resistance. The EMF is $E = 600$ volts when the switch is in position **A**. See Exercise 31.	
Page 342, line −5	It named for	It is named for
Page 359, Exercise 30.	$W[I_n, I_{-n}]$	$W[I_\nu, I_{-\nu}]$
Page 369, Answer to Exercise 7	$y_1(t) = y(t, \frac{1}{2}) = \sqrt{t}\left\{1 - \sum_{m=1}^{\infty} \frac{(4m-3)!!}{2^{6m}(m!)^2} t^{2m}\right\}$; $y_2 = y_1 \ln(t) + t^{1/2} \sum_{m=1}^{\infty} B_{2m} t^{2m}$, where $B_{2m} = -\dfrac{(4m-3)!!}{2^{6m}(m!)^2}(2\phi(4m-3) - \phi(2m-2) - 2 - \frac{1}{2}\phi(m))$.	
Page 370, Answer to Exercise 8c	$y_2(t) = 2y_1(t)\ln(t) + \cdots$	$y_2(t) = y_1(t)\ln(t) + \cdots$
Page 370, replace Exercise 14 with	Show that $\bar{y}_2(t) = -K\,y_1(t) + y_2(t)$, where $K = \displaystyle\int_0^1 \frac{e^\tau - 1}{\tau}\,d\tau$. Hint: It will be helpful to show that $\displaystyle\lim_{t\to 0} \frac{\bar{y}_2(t) - y_2(t)}{t}$ is finite.	
Page 386, second line before exercises	only special property to the system	only special property of the system

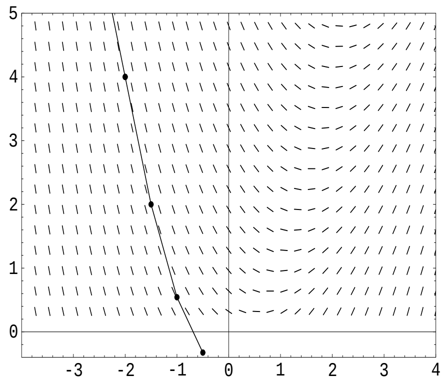
Location	Change	To
Page 391 line 4	**simple**	**semisimple**
Page 391 lines 6-8	Sentence "Thus, i is a ... Example 8.2.1	For example, a characteristic root of multiplicity 1 (a *simple* root) is semisimple, and every characteristic root of a diagonal matrix is semisimple.
Page 391, lines 13,20; page 392, line 1; page 393, lines $-3, -2$.	simple	semisimple

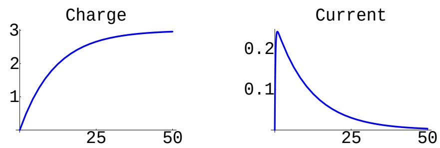
In the glossary for Chapter 8 (page 428) insert a new entry:

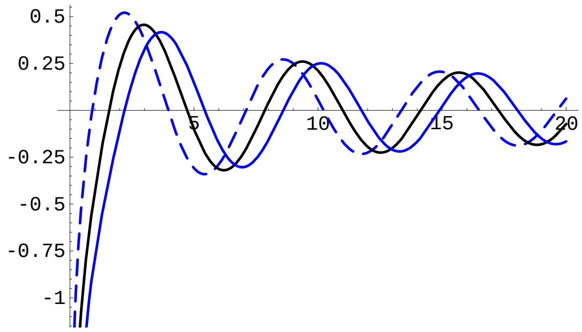
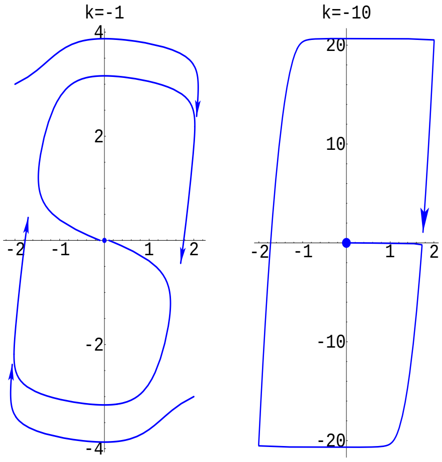
Semisimple characteristic root A characteristic root of a matrix with multiplicity (as a root of the characteristic equation) equal to the maximum number of linearly independent characteristic vectors belonging to it.

Corrections to the Answers

On page A-8, The answer to Exercise 4 of section 2.7 is missing. The answers numbered 4 through 26 should be numbered 5 through 27, and the following figure should be inserted as the answer to Exercise 4:



Page	Section	Answer	Replacement
A-17	4.5	7b	Change $+6t^2$ to $-6t^2$.
A-17	5.1	4	The answers shown are for parts (a), (c), and (e), not Exercises 4, 6, and 8, as indicated.
A-23	5.11	14a	$e^t(t-2)$
A-24	6.2	7a	$\begin{cases} x' = \frac{1}{24}(I - 2x + 6) \\ I' = \frac{5}{24}(-23I - 2x + 6) \end{cases}$
A-24	6.2	8a	The Laplace transforms of the charge and the current are $\dfrac{6(5+s)}{s(10+117\,s+24\,s^2)}$, and $\dfrac{6(5+s)}{s(10+117\,s+24\,s^2)}$, respectively. The inverse Laplace transforms of these expressions are rather complicated, and are not shown. The graphs of the charge and current, assuming homogeneous initial conditions, are as follows. 
A-25	6.4	31(c)	$x(t) = \frac{1}{8} + \frac{1}{697}(144\cos(6t) - 66\sin(6t)) - \frac{e^{-8t}}{5576}(1849\cos(4t) + 2906\sin(4t))$
A-26	6.6	15	$y \approx 2e^{-5t}\cos(10^4 t)$. With the decreased inductance, the initial magnitude of the current has increases from 10^{-4} amperes to 2 amperes, but the exponential damping factor decreases more rapidly than in the high inductance case. If there is no choke coil an initial surge of 2 million amperes would be observed.
A-27	6.8	9	Resonance occurs when k is an odd multiple of π, and in this case the resonant solution is $$y(t) = \frac{1}{(m\pi)^2}[\Lambda(t) + \cos(m\pi t) + \frac{2\sin(m\pi t)}{m\pi}(2\lfloor t \rfloor - 1)]$$
A-28	6.10	28	$L\left(\frac{1}{\lfloor t \rfloor + 1}\right) = \frac{1}{s}\left(1 - \sum_{k=1}^{\infty}\frac{e^{-sk}}{k(k+1)}\right)$, or, in closed form, $\frac{1}{s}(1-e^s)\ln(1-e^{-s})$.
A-28	6.10	29	$I = 12\sin(10t)\dfrac{e^{-10t+\lfloor \frac{10t}{\pi} \rfloor \pi}}{1-e^{-\pi}}$

Page	Section	Answer	Replacement
A-29	7.5	10	In the following graph, the blue dashed curve represents $y = Y_0(t)$, the solid black curve is $y = Y_{1/2}(t) = -\sqrt{\frac{2}{\pi t}}\cos(t)$, and the solid blue curve is $Y_1(t)$. 
A-34	8.6	19	If $q(x, y)$ is negative semidefinite, $L(x, y)$ is still a Lyapunov function for the system, and the origin is a stable stationary point that may or may not be asymptotically stable.
A-34	8.6	23	The system has a limit cycle for any negative value of k. 
A-36	9.3	5	$P_{2\pi}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -2 \\ 1 \end{bmatrix} + e^{-2\pi}\begin{bmatrix} x+2 \\ y-1 \end{bmatrix}$