

Conversion Guide

Boyce/DiPrima, Elementary Differential Equations and Boundary Value Problems
7 ed to 8 ed

Note: Sections that are not included here have no significant revisions.

Chapter 1

Arrowheads have been removed from the direction fields in this chapter.

- 1.1 Problems 1 through 14 are the same as in 7 ed.
Problems 15 through 20 and 23 are new.
Problems 21 and 22 (8ed) are the same as 15 and 16 (7 ed).
Problems 24 through 33 (8 ed) are the same as 17 through 26 (7 ed).
- 1.2 Problems 4, 11, 15, and 16 are new.
The others are the same as in the 7 ed, renumbered as follows:
Problems 1 through 3 (8 ed) are the same as 1 through 3 (7 ed).
Problems 5 through 10 (8 ed) are the same as 4 through 9 (7 ed).
Problems 12 through 14 (8 ed) are the same as 10 through 12 (7 ed).
Problems 17 through 19 (8 ed) are the same as 13 through 15 (7 ed).
- 1.3 Problems 30 and 31 are new.
The others are the same as in 7 ed.

Chapter 2

Arrowheads have been removed from the direction fields in this chapter.

- 2.1 This section has been substantially rewritten and its title has also been changed.
Examples 1 and 4 are new; Examples 2 and 3 are the same as Examples 3 and 4 (7ed), respectively.

Problems 23, 26, 32, 41, and 42 are new.
The others are the same as in the 7 ed, renumbered as follows:
Problems 1 through 22 (8 ed) are the same as 1 through 22 (7 ed).
Problems 24 and 25 (8 ed) are the same as 23 and 24 (7 ed).
Problems 27 through 31 (8 ed) are the same as 25 through 29 (7 ed).
Problems 33 through 40 (8 ed) are the same as 30 through 37 (7 ed).
- 2.2 Example 3 is new, replacing Example 3 from the 7 ed.
- 2.3 Problems 8, 11, 13, 19, and 30 from the 7 ed have been deleted.
Problems 6, 17, 18, and 24 are new in the 8 ed. The remaining problems in the 8

ed are the same as the remaining problems from the 7 ed, renumbered as follows:

Problems 1 through 5 (8 ed) are the same as 1 through 5 (7 ed).

Problems 7 and 8 (8 ed) are the same as 6 and 7 (7 ed).

Problems 9 and 10 (8 ed) are the same as 9 and 10 (7 ed).

Problem 11 (8 ed) is the same as 12 (7 ed).

Problems 12 through 16 (8 ed) are the same as 14 through 18 (7 ed).

Problems 19 through 23 (8 ed) are the same as 20 through 24 (7 ed).

Problems 25 through 29 (8 ed) are the same as 25 through 29 (7 ed).

Problems 30 through 32 (8 ed) are the same as 31 through 33 (7 ed).

2.4 Problem 2 has been replaced by a new problem. Other problems are unchanged.

2.5 The discussion has been modified in the 8 ed to give more emphasis to the phase line. and the related Figures 2.5.3a, 2.5.6a, and 2.5.8a are new.

Problems 1 through 24 (8 ed) are the same as 1 through 24 (7 ed).

Problems 25 and 26 (8 ed) are new and Problem 27 (8 ed) is a modification of Problem 25 (7 ed). They deal with bifurcations.

Problem 28 (8 ed) is the same as 26 (7 ed).

2.6 The proof of Theorem 2.6.1 has been revised. As a result, Problem 17 (7 ed) has been replaced by a new Problem 17 (8 ed). The remaining problems are unchanged.

Miscellaneous problems. Problems 1 through 32 (8 ed) are the same as 1 through 32 (7 ed).

Problems 33 through 35 (8 ed) are the same as 33 through 35 from Section 2.10 (6 ed).

Problems 36 through 51 (8 ed) are the same as 28 through 43 from Section 3.1 (7 ed).

Chapter 3

3.1 Problems 1 through 26 (8 ed) are the same as 1 through 26 (7 ed).

Problems 27 and 28 are new.

Problem 27 (7 ed) has been deleted.

Problems 28 through 43 (7 ed) have been moved to Miscellaneous Problems (8 ed).

3.2 Problem 27 is new. The remaining problems are the same as the problems in the 7 ed, renumbered as follows:

Problems 1 through 26 (8 ed) are the same as 1 through 26 (7 ed).

Problems 28 through 38 (8 ed) are the same as 27 through 37 (7 ed).

3.3 Problem 2 (7 ed) has been replaced by a new Problem 2 (8 ed). The remaining problems are unchanged.

- 3.5 Problems 17 and 20 (7 ed) have been slightly modified in the 8 ed.
- 3.6 Example 5 is new, replacing Example 5 from the 7 ed.
Problem 27 is new. The remaining problems are the same as in 7 ed, renumbered as follows:
Problems 1 through 26 (8 ed) are the same as 1 through 26 (7 ed).
Problems 28 through 37 (8 ed) are the same as 27 through 36 (7 ed).
- 3.7 Problem 27 has been slightly modified in the 8 ed.
- 3.9 This section has been considerably revised. The general case of damped vibrations is presented first and in greater detail than in 7 ed.
Figures 3.9.2, 3.9.3, and 3.9.4 are new.
Problem 14 (8 ed) is new, replacing Problem 14 (7 ed), which was deleted.
Problems 21 through 23 (8 ed) are modifications of Problems 21 through 23 (7 ed).
The remaining problems are unchanged.

Chapter 4

In this chapter (and in a few places in later chapters) we now use the notation $y^{(4)}$ rather than y^{iv} for the fourth derivative, and similarly for higher derivatives.

- 4.2 Problem 41 is new. Problems 1 through 40 (8 ed) are the same as 1 through 40 (7 ed).

Chapter 5

- 5.1 There is a slightly expanded discussion of analytic functions.
- 5.4 Example 5 (8 ed) is new. Examples 6 through 8 (8 ed) are the same as Examples 5 through 7 (7 ed).

Chapter 6

- 6.1 The review material on improper integrals has been placed in a new subsection, which precedes the discussion of Laplace transforms.
- 6.2 Problem 15 (8 ed) is new, replacing Problem 15 (7 ed). The remaining problems are unchanged.
- 6.6 The proof of Theorem 6.6.1 has been expanded to include some additional details.

Problems 12 and 23 through 28 are new. The remaining problems are the same as in the 7 ed, renumbered as follows:

Problems 1 through 11 (8 ed) are the same as 1 through 11 (7 ed).

Problems 13 through 22 (8 ed) are the same as 12 through 21 (7 ed).

Problem 29 is the same as 22 (7 ed).

Chapter 7

7.1 Problem 5 is new. Problem 5 (7ed) becomes Problem 6 (8ed), and Problem 6 (7ed) becomes Problem 18 (8ed). The remaining problems are the same as in 7 ed, renumbered as follows:

Problems 1 through 4 (8 ed) are the same as 1 through 4 (7 ed).

Problems 7 through 17 (8 ed) are the same as 7 through 17 (7 ed).

Problems 19 through 23 (8 ed) are the same as 18 through 22 (7 ed).

7.2 Example 2 and the paragraph preceding it have been rewritten.

7.6 This section has been significantly revised. Example 2 (7 ed) has been deleted, and Example 3 (7 ed) becomes Example 2 (8 ed). There is a new subsection in 8 ed on multiple spring--mass systems, with a new

Example 3 and three new figures (7.6.3, 7.6.4, and 7.6.5). Figures 7.6.3 and 7.6.4 from the 7 ed were deleted.

Problems 29, 30, and 31 are new. Problem 29 (7 ed) was deleted.

The remaining problems are unchanged.

7.7 Problem 17 is new. The remaining problems are the same as in 7 ed, renumbered as follows:

Problems 1 through 16 (8 ed) are the same as 1 through 16 (7 ed).

Problem 18 (8 ed) is the same as Problem 17 (7 ed).

7.9 There is a new subsection on the Laplace transform that includes a new Example 4. The answers to Problems 3 and 11 have been revised to match the solution produced by undetermined coefficients.

Chapter 8

8.1 We have replaced \bar{t} by T in the discussion leading to Eq. (24) and in Problem 23(c).

8.3 An explanation of the meaning of “fourth order four-stage” has been added.

There is also a new paragraph on adaptive Runge-Kutta methods.

Chapter 9

- 9.4 A brief discussion of bifurcation points has been added in the problems and Problems 13 through 16 are new in the 8 ed.
The remaining problems are the same as in the 7 ed, renumbered as follows:
Problems 1 through 11 (8 ed) are the same as 1 through 11 (7 ed).
Problem 12 (8 ed) is the same as Problem 13 (7 ed).
Problem 17 (8 ed) is a slight modification of Problem 12 (7 ed).
- 9.7 Problems 1 through 15 (8 ed) are the same as 1 through 15 (7 ed).
Problems 16 and 17 are new in 8 ed, and Problem 18 (8 ed) is an extension of Problem 16 (7 ed). These problems deal with Hopf bifurcations.

Chapter 10

- 10.1 Problems 11 through 13 and 20 through 22 are new.
Problems 1 through 10 (8 ed) are the same as 1 through 10 (7 ed).
Problems 14 through 19 (8 ed) are the same as 11 through 16 (7 ed).
Problem 23 (8 ed) is a slight modification of Problem 17 (7 ed).
- 10.3 Problem 18 (8 ed) is an expansion of Problem 18 (7 ed).
The remaining problems are unchanged.
- 10.6 Problems 21 through 23 on external heat sources are new. The remaining problems are unchanged.
- 10.7 Problems 23 and 24 on dispersive waves are new. Problem 16 (7 ed) has been deleted.
Problems 1 through 15 (8 ed) are the same as 1 through 15 (7 ed).
Problems 16 through 22 (8 ed) are the same as 17 through 23 (7 ed).
- 10.8 Problem 16 on flow through an aquifer is new. The remaining 15 problems are unchanged.

Chapter 11

- 11.1 The form of the answer to Problem 16 has been changed.
- 11.2 Problems 27 and 28 are new. The remaining problems are unchanged.