練習 7.8(下)

5–40 Determine whether each integral is convergent or divergent. Evaluate those that are convergent.

7. $\int_{-\infty}^{-1} \frac{1}{\sqrt{2-w}}\,dw$ **11.** $\int_{-\infty}^{\infty} \frac{x}{1+x^2}\,dx$ **15.** $\int_{2\pi}^{\infty} \sin\theta\,d\theta$

21. $\int_{1}^{\infty} \frac{\ln x}{x}\,dx$ **33.** $\int_{0}^{33} (x-1)^{-1/5}\,dx$ **35.** $\int_{0}^{3} \frac{dx}{x^2-6x+5}$

49–54 Use the Comparison Theorem to determine whether the integral is convergent or divergent.

49. $\int_{0}^{\infty} \frac{x}{x^3+1}\,dx$ **51.** $\int_{1}^{\infty} \frac{x+1}{\sqrt{x^4-x}}\,dx$ **53.** $\int_{0}^{1} \frac{\sec^2 x}{x\sqrt{x}}\,dx$

答案 7.8 (下)

EXERCISES 7.8 ■ PAGE 515

Abbreviations: C, convergent; D, divergent

7. D **11.** D **15.** D **21.** D **33.** $\frac{75}{4}$

35. D **49.** C **51.** D **53.** D

練習 11.1

9–14 Find a formula for the general term a_n of the sequence, assuming that the pattern of the first few terms continues.

9. $\{1, \frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \frac{1}{9}, \ldots\}$

17–46 Determine whether the sequence converges or diverges. If it converges, find the limit.

19. $a_n = \dfrac{3 + 5n^2}{n + n^2}$

23. $a_n = \tan\left(\dfrac{2n\pi}{1 + 8n}\right)$

25. $a_n = \dfrac{(-1)^{n-1}n}{n^2 + 1}$

33. $\{n^2 e^{-n}\}$

35. $a_n = \dfrac{\cos^2 n}{2^n}$

43. $\{0, 1, 0, 0, 1, 0, 0, 0, 1, \ldots\}$

47–53 Use a graph of the sequence to decide whether the sequence is convergent or divergent. If the sequence is convergent, guess the value of the limit from the graph and then prove your guess. (See the margin note on page 680 for advice on graphing sequences.)

47. $a_n = 1 + (-2/e)^n$

49. $a_n = \sqrt{\dfrac{3 + 2n^2}{8n^2 + n}}$

53. $a_n = \dfrac{1 \cdot 3 \cdot 5 \cdot \cdots \cdot (2n - 1)}{(2n)^n}$

60–66 Determine whether the sequence is increasing, decreasing, or not monotonic. Is the sequence bounded?

61. $a_n = \dfrac{1}{2n + 3}$

63. $a_n = n(-1)^n$

65. $a_n = \dfrac{n}{n^2 + 1}$

69. Show that the sequence defined by

$$a_1 = 1 \qquad a_{n+1} = 3 - \frac{1}{a_n}$$

is increasing and $a_n < 3$ for all n. Deduce that $\{a_n\}$ is convergent and find its limit.

答案(11.1)

EXERCISES 11.1 ■ PAGE 684

Abbreviations: C, convergent; D, divergent

9. $a_n = 1/(2n - 1)$ **19.** 5 **23.** 1 **25.** 0

33. 0 **35.** 0 **43.** D **47.** 1 **49.** $\frac{1}{2}$

53. 0 **61.** Decreasing; yes

63. Not monotonic; no **65.** Decreasing; yes

69. $\frac{1}{2}(3 + \sqrt{5})$