

Example numbers refer to the 7th edition.

1. Techniques of Integration Part A

- Evaluate an indefinite integral using integration by parts. (Section 7.1 Example 1–3)
- Evaluate an indefinite integral involving trigonometric functions. (Section 7.2 Example 1, 2, and 4–7)
 - All necessary trigonometric identities will be provided, but basic derivatives should be memorized.

2. Techniques of Integration Part B

- Evaluate an indefinite integral using trigonometric substitution. (Section 7.3 Example 1, 3, and 5)
- Evaluate an indefinite integral using partial fractions. (Section 7.4 Example 2, 4, and 5)
 - You will not need to perform polynomial division.

3. Numerical Integration

- Approximate the value of a definite integral using the midpoint and trapezoidal rules. Draw a picture to accompany your work. (Section 7.6 Example 1)
- Bound the error of an approximation given by the midpoint and trapezoidal rules. (Section 7.6 Example 3)
 - The error formulas will be provided.
- Find the least number of subintervals needed to ensure the error produced by the midpoint and trapezoidal rules are less than a certain tolerance. (Section 7.6 Example 2)

4. Improper Integrals

- Evaluate or show divergence of an improper integral with infinity in one or both bounds. (Section 7.8 Example 1–3)
- Evaluate or show divergence of an improper integral whose integrand has a vertical asymptote in the domain of integration. (Section 7.8 Example 5, 7, and 8)
- Apply the comparison test to show whether an improper integral is convergent or divergent. (Section 7.8 Example 9 and 10)