Trigonometric Integrals (Section 3) Version A
Rensselaer Calculus Skills Practice Page

No calculators will be allowed and no partial credit will be given.

1. Express the indefinite integral \( \int 2 \cos^3(x) \sin(x) \, dx \) in terms of elementary functions. Use the symbol \( C \) to denote an arbitrary constant.

2. Express the indefinite integral \( \int 2 \cos^3(x) \sin^2(x) \, dx \) in terms of elementary functions. Use the symbol \( C \) to denote an arbitrary constant.

3. Express in simplified form the value of \( \int_{\pi/2}^{\pi} 2 \cos^3(x) \sin^3(x) \, dx \).

4. Express in simplified form the value of \( \int_{0}^{\pi/2} 5 \cos(x) \sin^4(x) \, dx \).

5. Express the indefinite integral \( \int 2 \cos^3(t) \sqrt{\sin(t)} \, dt \) in terms of elementary functions. Use the symbol \( C \) to denote an arbitrary constant.

6. Express the indefinite integral \( \int 2 \cos(t) \sqrt{\sin(t)} \, dt \) in terms of elementary functions. Use the symbol \( C \) to denote an arbitrary constant.

7. Express in simplified form the value of \( \int_{0}^{\pi/2} 4 \cos(x) \sqrt{\sin(x)} \, dx \).

8. Express in simplified form the value of \( \int_{0}^{\pi/2} 2 \sqrt{\cos(x)} \sin^3(x) \, dx \).

9. Express the indefinite integral \( \int 2 \cos^2(t) \sin^2(t) \, dt \) in terms of elementary functions. Use the symbol \( C \) to denote an arbitrary constant.
1. \(-\frac{\cos(x)^4}{2} + C\)

2. \(\frac{2}{7} \sin^7(x) - \frac{4}{5} \sin^5(x) + \frac{2}{3} \sin^3(x) + C\)

3. \(-\frac{1}{6}\)

4. 1

5. \(\frac{4}{3} \sin^\frac{3}{2}(t) - \frac{4}{7} \sin^\frac{7}{2}(t) + C\)

6. \(\frac{4}{7} \cos\frac{7}{2}(t) - \frac{4}{3} \cos\frac{3}{2}(t) + C\)

7. \(\frac{8}{3}\)

8. \(\frac{16}{21}\)

9. \(\frac{t}{4} \sin\frac{4t}{16} + C\)