Basic Integrals **Version D**
Rensselaer Calculus Skills Practice Page

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

---

1. Express the indefinite integral $\int t^{\frac{5}{4}}\,dt$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
2. Express the indefinite integral $\int \left(x^4+3\,x^2+6\right)\,dx$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
3. Express the indefinite integral $\int 5\,\left(\sec\left(t\right)\right)^2\,dt$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
4. Express the indefinite integral $\int \left(3\,\left(\sec\left(x\right)\right)^2+7\,e^x\right)\,dx$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
5. Express the indefinite integral $\int \frac{5}{x^{\frac{2}{3}}}\,dx$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
6. Express the indefinite integral $\int x\,\left(6\,x^3+4\right)\,dx$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
7. Express the indefinite integral $\int \frac{7\,x^4+2\,x^3-5}{x}\,dx$ in terms of elementary functions. Use the symbol C to denote an arbitrary constant.
8. Express in simplified form the value of $\int_0^1 \left(5\,x+4\right)\,dx$.
9. Express in simplified form the value of $\int_0^2 \left(4\,x^2+3\,x-2\right)\,dx$.
10. Express in simplified form the value of $\int_0^1 \left(3\,x^{\frac{3}{2}}+x^{\frac{1}{3}}\right)\,dx$.
11. Evaluate $\int_1^2 \frac{1}{x^{2/5}}\,dx$. Express your answer in simplified form.

Basic Integrals **Version D**

Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

---

1. $\frac{4\,t^{\frac{9}{4}}}{9} + C$
2. $\frac{x^5}{5} + x^3 + 6\,x + C$
3. $5\,\tan(t) + C$
4. $3\,\tan(x) + 7\,e^x + C$
5. $15\,x^{\frac{1}{3}} + C$
6. $\frac{6\,x^5}{5} + 2\,x^2 + C$
7. $-5\,\ln(|x|) + \frac{7\,x^4}{4} + \frac{2\,x^3}{3} + C$
8. $\frac{13}{2}$
9. $\frac{38}{3}$
10. $\frac{39}{20}$
11. $\frac{5}{3} \cdot 2^{\frac{3}{5}} - \frac{5}{3}$