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

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

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

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\frac{5\,x^{\frac{8}{5}}}{8} + C$
2. $\frac{x^7}{7} + \frac{5\,x^3}{3} + 6\,x + C$
3. $\frac{6}{\cos(t)} + C$
4. $5\,\tan(x) + 7\,e^x + C$
5. $-\frac{12}{\sqrt{x}} + C$
6. $\frac{6\,x^5}{5} + \frac{7\,x^2}{2} + C$
7. $-2\,\ln(|x|) + \frac{x^4}{2} + \frac{5\,x^2}{2} + C$
8. $\frac{13}{2}$
9. 14
10. $\frac{67}{35}$
11. $\frac{5}{2} \cdot 4^{\frac{2}{5}} - \frac{5}{2}$