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

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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