

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

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

1. $\frac{(x^2 + 8x + 4)^4}{4} + C$

2. $\frac{e^{6x}}{6} + C$

3. $\frac{2(\sin(x))^7}{7} + C$

4. $-\frac{5e^{-t^3}}{3} + C$

5. $-\frac{6e^{x^{\frac{5}{2}+1}}}{5} + C$

6. $\ln(|3x^2 + 5x + 1|) + C$

7. $\frac{26}{3}$

8. $\frac{5}{3} - \frac{5 \cdot e^{-1}}{3}$

9. 0

10. $\frac{4}{3}$