

Integration by Substitution - 1

Exercises – no calculator

[answers on next page]

Compute each indefinite integral using either a guess-and-check method, or by substitution.

1. $\int \frac{1}{2x-1} dx$

2. $\int \cos(2x) dx$

3. $\int e^{x/2} dx$

4. $\int \sqrt{2x+3} dx$

5. $\int 3e^{1-2x} dx$

6. $\int \sin(4x) dx$

7. $\int \sqrt{5-3x} dx$

8. $\int \tan x dx$

9. $\int x\sqrt{x^2+9} dx$

10. $\int \frac{x^2-2}{x^3-6x} dx$

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Answers

1. $\frac{1}{2} \ln|2x-1| + C$

2. $\frac{1}{2} \sin(2x) + C$

3. $2e^{x/2} + C$

4. $\frac{1}{3} \sqrt{(2x+3)^3} + C$

5. $-\frac{3}{2} e^{1-2x} + C$

6. $-\frac{1}{4} \cos(4x) + C$

7. $-\frac{2}{9} \sqrt{(5-3x)^3} + C$

8. $-\ln|\cos x| + C$

9. $\frac{1}{3} \sqrt{(x^2+9)^3} + C$

10. $\frac{1}{3} \ln|x^3-6x| + C$