



# Methods of integral calculus


## Interactive tests

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Methods of integration  
file int-meth.tex

Look at three or four or twenty my quizzes and then fill in my \_\_\_\_\_ please!

To create your own test from based on this one you will need free [AcroT<sub>E</sub>XeDucation bundle](#), the T<sub>E</sub>X source attached here  and to follow instruction on [home site](#).



Home Page

Print

Title Page

⏪ ⏩

⏪ ⏩

Page 1 of 6

Go Back

Full Screen

Close

Quit



Given an integral, you have to be able to recognize, which of the methods of integral calculus should be employed to evaluate this integral. Possible answers include: (always prefer the simplest possibility)

- **formulas**: The basic formulas are sufficient to evaluate the integral. Includes composite functions with linear inside function (formula  $\int f(ax + b)dx$ ) and formula  $\int \frac{f'(x)}{f(x)} dx$ .
- **partial fractions**: We have to write the function as sum of partial fractions and then integrate. If the function is not proper, we have to divide first.
- **by parts**: The integral is typical for integration by parts.
- **substitution**: The method of substitution allows to evaluate the integral.
- **another technique**: None of these techniques is convenient for this integral.

[Home Page](#)[Print](#)[Title Page](#)[◀](#) [▶](#)[◀](#) [▶](#)

Page 2 of 6

[Go Back](#)[Full Screen](#)[Close](#)[Quit](#)



Here you can practice managing the test.

- click `Begin Quiz`,
- fill your answers (you can make an error to see, how incorrect answers are corrected),
- click `End Quiz`,
- click `Correct my answers` to see correct answers.

formulas  
partial fractions  
by parts  
substitution  
another technique

Mark the correct answer

1. formulas
2. partial fractions
3. by parts
4. another technique
5. substitution

Home Page

Print

Title Page

◀ ▶

◀ ▶

Page 3 of 6

Go Back

Full Screen

Close

Quit



formulas

partial fractions

by parts

substitution

another technique

Mark the correct answer

1.  $\int xe^x dx$

2.  $\int \frac{x}{x^2 + 1} dx$

3.  $\int \frac{x + 1}{(x - 1)^2} dx$

4.  $\int x + \sin x dx$

5.  $\int xe^{-x^2} dx$

6.  $\int \frac{\cos x}{\sin^4 x} dx$

7.  $\int (x^2 + 1) \sin x dx$

8.  $\int \ln x dx$

Home Page

Print

Title Page

◀

▶

◀

▶

Page 4 of 6

Go Back

Full Screen

Close

Quit



formulas

partial fractions  
by parts

substitution

another technique

Mark the correct answer

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

2.  $\int \frac{\sqrt{x}+1}{x+2} dx$

3.  $\int \frac{1}{(1-x)^2} dx$

4.  $\int e^{2x} dx$

5.  $\int \frac{x}{e^{2x}} dx$

6.  $\int \sin^3 x dx$

7.  $\int \frac{\ln x}{x} dx$

8.  $\int \frac{1}{x^2+x+1} dx$

Home Page

Print

Title Page

◀ ▶

◀ ▶

Page 5 of 6

Go Back

Full Screen

Close

Quit



formulas

partial fractions

by parts

substitution

another technique

Mark the correct answer

1.  $\int (x^2 + 1)x^3 dx$

2.  $\int \frac{x^2 - 1}{x(x^2 + 1)} dx$

3.  $\int \frac{\arctan^2 x}{1 + x^2} dx$

4.  $\int x^2 + 1 + e^{-x} dx$

5.  $\int x \arctan x dx$

6.  $\int 1 dx$

7.  $\int \frac{1}{\sqrt{x}} dx$

8.  $\int (x^2 - 3)^3 dx$

Home Page

Print

Title Page



Page 6 of 6

Go Back

Full Screen

Close

Quit