

Integral berechnen

Aufgabenstellung:

Berechnen Sie $\int (ah^3 + a^2)dh$!

Quelle: BMB, Aufgabenpool SRP M, Nr. 1_167, offene Typ-1-Aufgabe, Grundkompetenz AN 4.2,
aufgabenpool.srdp.at/srp_ahs/download.php?file=Integral_berechnen.pdf

Integral berechnen

0.5 1/2 $\int dx$ $\int dx$ Simp $\int dx$ $\int dx$

ah^3+a^2

Keyboard

Math1	a	b	c	d	e	f
Math2	g	h	i	j	k	l
Math3	m	n	o	p	q	r
Trig	s	t	u	v	w	x
Var	y	z	()	,	⇒	CAPS
abc						

← Ans EXE

Algeb Standard Reell 2π

Integrand markieren

Tipp: Stift von rechts nach links ziehen

Integral berechnen

The screenshot shows the 'Edit Aktion' menu with 'Interaktiv' selected. The expression $ah^3 + a^2$ is entered in the top field. The 'Integral' option is highlighted in the menu. The calculator interface includes a keypad with variables a through x , a numeric keypad, and a mode selector at the bottom.

The screenshot shows the 'Integral' dialog box. The 'Unbestimmt. Integral' option is selected. The 'Ausdruck:' field contains $ah^3 + a^2$ and the 'Variable:' field contains h . The dialog box has 'OK' and 'Abbrechen' buttons. The calculator keypad is visible at the bottom.

Integrand → Ausdruck: $ah^3 + a^2$
Integrationsvariable → Variable: h

Integral berechnen

The screenshot shows the CASIO ClassPad II calculator interface. At the top left is a red button with the square root symbol $\sqrt{\alpha}$. The main window is titled "Edit Aktion Interaktiv" and contains a toolbar with icons for numerical operations (0.5, 1/2), navigation (hand, arrow), integration (∫dx, ∫dx↔), simplification (Simp), differentiation (fdx), and graphing (graph icon). The main display area shows the integral expression $\int a \cdot h^3 + a^2 dh$ and the result $\frac{a \cdot h^4}{4} + a^2 \cdot h$. A vertical scrollbar is on the right side of the display. At the bottom, there are mode selection buttons: "Algeb", "Standard", "Reell", and "2π".

ClassPad gibt *eine* Stammfunktion aus ohne Integrationskonstante C

Lösung:

$$\frac{ah^4}{4} + a^2h + C \text{ (mit } C \in \mathbb{R}\text{)}$$

Integral berechnen (Alternative 1)

0.5 $\frac{1}{2}$ $\int dx$ $\int dx$ $\int dx$ $\int dx$ $\int dx$ $\int dx$

$\int ah^3 + a^2 dh$

Math1	Line	$\frac{\square}{\square}$	$\sqrt{\square}$	π	\Rightarrow
Math2	\square^\square	e^\square	ln	i	∞
Math3	$ \square $	$\frac{d}{d\square}$	$\frac{d^2}{d^2\square}$	$\int \square$	lim
Trig	$[\square]$	$[\square]$	$[\square]$	Σ	\prod
Var	sin	cos	tan	θ	t
abc					
	\leftarrow	\leftarrow	\leftarrow	Ans	EXE

Algeb Standard Reell 2π

Hinweis: Wechsel von Integrand zu Integrationsvariable mit \square

Math1	a	b	c	d	e	f
Math2	g	h	i	j	k	l
Math3	m	n	o	p	q	r
Trig	s	t	u	v	w	x
Var	y	z	()	,	\Rightarrow	CAPS
abc						
	\leftarrow	\leftarrow	\leftarrow	Ans	EXE	

Integral berechnen (Alternative 1)

0.5 1/2 $\int dx$ $\int dx$ Simp $\int dx$ $\int dx$

$\int ah^3 + a^2 dh$

$\frac{a \cdot h^4}{4} + a^2 \cdot h$

Algeb Standard Reell 2π

ClassPad gibt *eine* Stammfunktion aus ohne Integrationskonstante

Lösung:

$$\frac{ah^4}{4} + a^2h + C \text{ (mit } C \in \mathbb{R}\text{)}$$

Integral berechnen (Alternative 2)

0.5 1/2 $\int dx$ $\int dx$ Simp $\int dx$ $\int dx$

$F'=ah^3+a^2$

Keyboard

Math1	a	b	c	d	e	f
Math2	g	h	i	j	k	l
Math3	m	n	o	p	q	r
Trig	s	t	u	v	w	x
Var	y	z	()	,	⇒	CAPS
abc						

Algeb Standard Reell 2π

Integrand ist Ableitung F'
aller Stammfunktionen F

Gleichung markieren

Tipp: Stift von rechts nach links ziehen

Math1	Line	$\frac{\square}{\square}$	$\sqrt{\square}$	π	\Rightarrow
Math2	Define	f	g	i	∞
Math3	solve(dSlv	'	$\left\{ \begin{matrix} \square \\ \square \end{matrix} \right\}$	
Trig	<	>	()	{ }	[]
Var	\leq	\geq	=	\neq	\angle
abc					

←

Integral berechnen (Alternative 2)

The screenshot shows the 'Edit Aktion' menu with 'Interaktiv' selected. The 'dSolve' option is highlighted. Below the menu is a keypad with mathematical symbols and variables.

Math1	a					
Math2	g	h	i	j	k	l
Math3	m	n	o	p	q	r
Trig	s	t	u	v	w	x
Var	y	z	$()$	$,$	\Rightarrow	CAPS
abc						

Buttons: \leftarrow , \rightarrow , \updownarrow , Ans, EXE

Mode: Algeb Standard Reell 2π

Integrationsvariable
Stammfunktion

The 'dSolve' dialog box shows the equation $F' = ah^3 + a^2$. The independent variable is h and the dependent variable is F . The 'Keine Bedingung' radio button is selected.

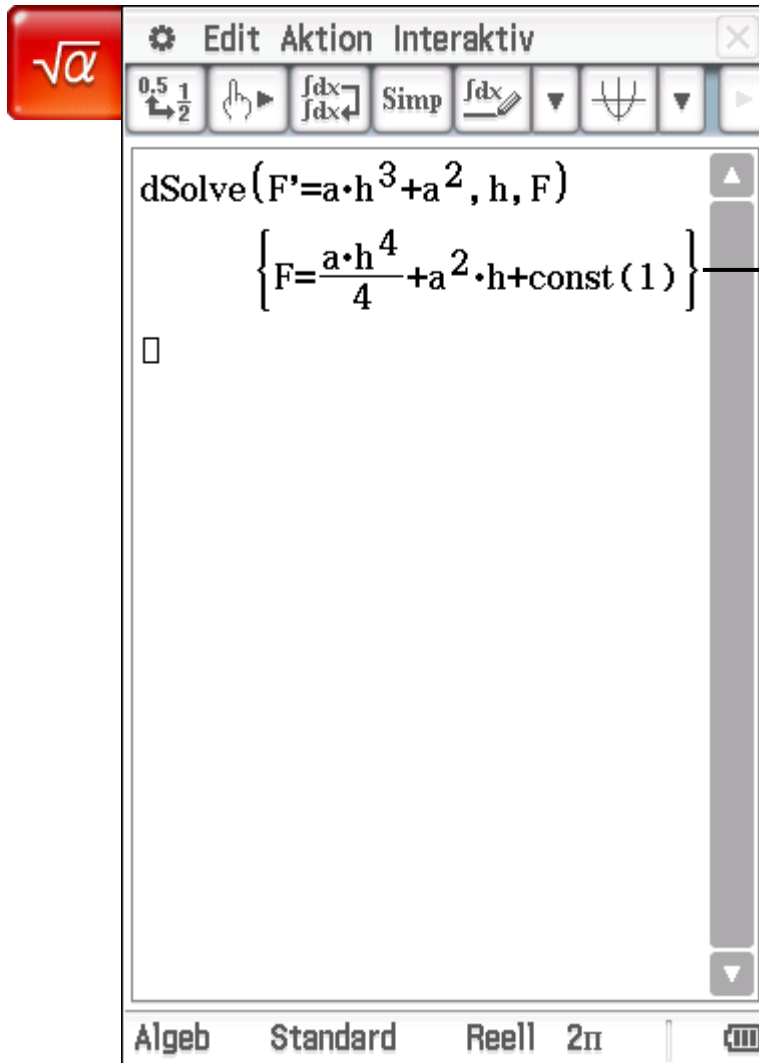
Buttons: OK, Abbrechen

Math1	a	b	c	d	e	f
Math2	g	h	i	j	k	l
Math3	m	n	o	p	q	r
Trig	s	t	u	v	w	x
Var	y	z	$()$	$,$	\Rightarrow	CAPS
abc						

Buttons: \leftarrow , \rightarrow , \updownarrow , Ans, EXE

Mode: Algeb Standard Reell 2π

Integral berechnen (Alternative 2)



The screenshot shows the CASIO calculator's 'Edit Aktion Interaktiv' window. The input is $dSolve(F'=a \cdot h^3 + a^2, h, F)$. The output is $\left\{ F = \frac{a \cdot h^4}{4} + a^2 \cdot h + \text{const}(1) \right\}$. The calculator interface includes a toolbar with various mathematical symbols and a bottom menu with 'Algeb', 'Standard', 'Reell', and '2π'.

Stammfunktion mit Integrationskonstante,
 $\text{const}(1)$ ist beliebige Zahl

Lösung:

$$\frac{ah^4}{4} + a^2h + C \text{ (mit } C \in \mathbb{R}\text{)}$$