

# Package `dlmath`

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November 11, 2005

## Abstract

The package `dlmath` provides L<sup>A</sup>T<sub>E</sub>X commands for writing fractions, integrals, derivatives, norms and scalar products. The latest version of the package can always be found on the web:

<http://www.davidlarsson.se/math/latex>

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# 1 Fractions

## 1.1 Command `oneover`

Command for writing a fraction with “1” in the nominator. The parameter *denominator* is the denominator in the fraction. For example, the command

```
\oneover{(1-e^{-t})^2}
```

gives the expression

$$\frac{1}{(1 - e^{-t})^2}.$$

```
\oneover{denominator}
```

## 1.2 Command `half`

Command for writing the fraction with “2” in the denominator. The parameter *nominator* is the nominator in the fraction. For example, the command

```
\half{(1-e^{-t})^2}
```

gives the expression

$$\frac{(1 - e^{-t})^2}{2}.$$

```
\half{nominator}
```

## 1.3 Command `onehalf`

Command for writing the fraction  $\frac{1}{2}$ .

```
\onehalf
```

## 1.4 Command `onethird`

Command for writing the fraction  $\frac{1}{3}$ .

```
\onethird
```

## 1.5 Command `twothirds`

Command for writing the fraction  $\frac{2}{3}$ .

```
\twothirds
```

## 1.6 Command onefourth

Command for writing the fraction  $\frac{1}{4}$ .

```
\onefourth
```

## 1.7 Command twofourths

Command for writing the fraction  $\frac{2}{4}$ .

```
\twofourths
```

## 1.8 Command threefourths

Command for writing the fraction  $\frac{3}{4}$ .

```
\threefourths
```

# 2 Integrals

## 2.1 Command intd

Command for writing a definite integral. The parameter *from* and *to* defines the interval of integration, *integrand* is the integrand and *variable* is the variable of integration. For example, the command

```
\intd{0}{\infty}{e^{-t}}{t}
```

gives the expression

$$\int_0^{\infty} e^{-t} dt.$$

```
\intd{from}{to}{integrand}{variable}
```

## 2.2 Command inti

Command for writing an indefinite integral. The parameter *integrand* is the integrand and *variable* is the variable of integration. For example, the command

```
\inti{e^{-t}}{t}
```

gives the expression

$$\int e^{-t} dt.$$

`\inti{integrand}{variable}`

## 2.3 Command eval

Command for writing evaluation, often used when calculating integrals. The parameter *function* is the function to evaluate and the parameters *from* and *to* is the endpoints of evaluation. For example, the command

`\eval{x\sin\half{\pi} x}{0}{1}`

gives the expression

$$\left[ x \sin \frac{\pi}{2} x \right]_0^1.$$

`\eval{function}{from}{to}`

## 3 Derivatives

### 3.1 Command oder

Command for writing derivatives. The parameter *function* is the function we take derivative of and *variable* is the variable of differentiation. For example, the command

`\oder{f}{x}`

gives the expression

$$\frac{df}{dx}.$$

`\oder{function}{variable}`

### 3.2 Command pder

Command for writing partial derivatives. The parameter *function* is the function we take derivative of and *variable* is the variable of differentiation. For example, the command

`\pder{f}{x}`

gives the expression

$$\frac{\partial f}{\partial x}.$$

`\pder{function}{variable}`

## 4 Norms

### 4.1 Command norm

Command for writing norms. The parameter *expression* is the expression we take norm of. For example, the command

`\norm{f(x)}`

gives the expression

$$\|f(x)\|.$$

`\norm{expression}`

### 4.2 Command norml

Command for writing norms. The parameter *expression* is the expression we take norm of, the parameter *label* gives the possibility to specify which norm we have. For example, the command

`\norml{f(x)}{\infty}`

gives the expression

$$\|f(x)\|_{\infty}.$$

`\norml{expression}{label}`

## 5 Scalar products

### 5.1 Command scp

Command for writing scalar products. The parameters *vector1* and *vector2* are the vectors involved in the scalar product. For example, the command

`\scp{u}{v}`

gives the expression

$$\langle u, v \rangle.$$

```
\scp{vector1}{vector2}
```

## 5.2 Command scprb

Command for writing scalar products with round brackets. The parameters *vector1* and *vector2* are the vectors involved in the scalar product. For example, the command

```
\scprb{u}{v}
```

gives the expression

$$(u, v).$$

```
\scprb{vector1}{vector2}
```