ソースコード 1　derivative パッケージの setup 例 1

```
\derivativesetup{
        d = roman,
}
```

表 1　常微分マクロの仕様確認。コード 1 による設定を適用した場合の挙動

No	command	expected	result
1	`\odr{x}{f}`	$\frac{\mathrm{d}f}{\mathrm{d}x}$	$\frac{\mathrm{d}f}{\mathrm{d}x}$
2	`\odr{x}[2]{f}`	$\frac{\mathrm{d}^2f}{\mathrm{d}x^2}$	$\frac{\mathrm{d}^2f}{\mathrm{d}x^2}$
3	`\odr{x}[n]{f}`	$\frac{\mathrm{d}^nf}{\mathrm{d}x^n}$	$\frac{\mathrm{d}^nf}{\mathrm{d}x^n}$
4	`\odr{x_1}{f}`	$\frac{\mathrm{d}f}{\mathrm{d}x_1}$	$\frac{\mathrm{d}f}{\mathrm{d}x_1}$
5	`\odr{x_1}{y_2}`	$\frac{\mathrm{d}y_2}{\mathrm{d}x_1}$	$\frac{\mathrm{d}y_2}{\mathrm{d}x_1}$
6	`\odr{t}{\bm{u}}`	$\frac{\mathrm{d}\boldsymbol{u}}{\mathrm{d}t}$	$\frac{\mathrm{d}\boldsymbol{u}}{\mathrm{d}t}$
7	`\odr{\bm{x}}{f}`	$\frac{\mathrm{d}f}{\mathrm{d}\boldsymbol{x}}$	$\frac{\mathrm{d}f}{\mathrm{d}\boldsymbol{x}}$

ソースコード 2　derivative パッケージの setup 例 2

```
\derivativesetup{
        d = italic,
}
```

表 2　常微分マクロの仕様確認。コード 2 による設定を適用した場合の挙動

No	command	expected	result
1	`\odr{x}{f}`	$\frac{df}{dx}$	$\frac{df}{dx}$
2	`\odr{x}[2]{f}`	$\frac{d^2f}{dx^2}$	$\frac{d^2f}{dx^2}$
3	`\odr{x}[n]{f}`	$\frac{d^nf}{dx^n}$	$\frac{d^nf}{dx^n}$
4	`\odr{x_1}{f}`	$\frac{df}{dx_1}$	$\frac{df}{dx_1}$
5	`\odr{x_1}{y_2}`	$\frac{dy_2}{dx_1}$	$\frac{dy_2}{dx_1}$
6	`\odr{t}{\bm{u}}`	$\frac{d\boldsymbol{u}}{dt}$	$\frac{d\boldsymbol{u}}{dt}$
7	`\odr{\bm{x}}{f}`	$\frac{df}{d\boldsymbol{x}}$	$\frac{df}{d\boldsymbol{x}}$

表 3　偏微分マクロの仕様確認

No	command	expected	result
1	`\pdr{{x}{f}}`	$\frac{\partial f}{\partial x}$	$\frac{\partial f}{\partial x}$
2	`\pdr{{x}[2]{f}}`	$\frac{\partial^2 f}{\partial x^2}$	$\frac{\partial^2 f}{\partial x^2}$
3	`\pdr{{x}{y}{f}}`	$\frac{\partial^2 f}{\partial x \partial y}$	$\frac{\partial^2 f}{\partial x \partial y}$
4	`\pdr{{x}[2]{y}{f}}`	$\frac{\partial^3 f}{\partial x^2 \partial y}$	$\frac{\partial^3 f}{\partial x^2 \partial y}$
5	`\pdr{{x}[2]{y}[3]{f}}`	$\frac{\partial^5 f}{\partial x^2 \partial y^3}$	$\frac{\partial^5 f}{\partial x^2 \partial y^3}$
6	`\pdr{{x_1}{y}}`	$\frac{\partial y}{\partial x_1}$	$\frac{\partial y}{\partial x_1}$
7	`\pdr{{x}{f_2}}`	$\frac{\partial f_2}{\partial x}$	$\frac{\partial f_2}{\partial x}$
8	`\pdr{{x_1}{t}{f}}`	$\frac{\partial^2 f}{\partial x_1 \partial t}$	$\frac{\partial^2 f}{\partial x_1 \partial t}$
9	`\pdr{{x_1}{x_2}{f}}`	$\frac{\partial^2 f}{\partial x_1 \partial x_2}$	$\frac{\partial^2 f}{\partial x_1 \partial x_2}$
10	`\pdr{{\bm{x}}{f}}`	$\frac{\partial f}{\partial \boldsymbol{x}}$	$\frac{\partial f}{\partial \boldsymbol{x}}$
11	`\pdr{{\bm{x}}{\bm{y}}{f}}`	$\frac{\partial^2 f}{\partial \boldsymbol{x} \partial \boldsymbol{y}}$	$\frac{\partial^2 f}{\partial \boldsymbol{x} \partial \boldsymbol{y}}$
12	`\pdr{{\bm{x}_1}{\bm{y}_2}{f}}`	$\frac{\partial^2 f}{\partial \boldsymbol{x}_1 \partial \boldsymbol{y}_2}$	$\frac{\partial^2 f}{\partial \boldsymbol{x}_1 \partial \boldsymbol{y}_2}$
13	`\pdr{{x}[2]{\bm{u}}}`	$\frac{\partial^2 \boldsymbol{u}}{\partial x^2}$	$\frac{\partial^2 \boldsymbol{u}}{\partial x^2}$
14	`\pdr{{x}{\bm{u}}}+\pdr{{y}{\bm{u}}}`	$\frac{\partial \boldsymbol{u}}{\partial x} + \frac{\partial \boldsymbol{u}}{\partial y}$	$\frac{\partial \boldsymbol{u}}{\partial x} + \frac{\partial \boldsymbol{u}}{\partial y}$
15	`\pdr{{x}{}}`	$\frac{\partial}{\partial x}$	$\frac{\partial}{\partial x}$
16	`\pdr{{x_1}{}}`	$\frac{\partial}{\partial x_1}$	$\frac{\partial}{\partial x_1}$
17	`\pdr{{\bm{x}}{}}`	$\frac{\partial}{\partial \boldsymbol{x}}$	$\frac{\partial}{\partial \boldsymbol{x}}$

表 4　偏微分マクロの仕様確認。階数の自動計算抑制

No	command	expected	result
1	`\pdr*{{x}[n]{f}[n]}`	$\frac{\partial^n f}{\partial x^n}$	$\frac{\partial^n f}{\partial x^n}$
2	`\pdr*{{x}[n]{}[n]}`	$\frac{\partial^n}{\partial x^n}$	$\frac{\partial^n f}{\partial x^n}$
3	`\pdr*{{x}[n]{y}[m]{f}[n+m]}`	$\frac{\partial^{n+m} f}{\partial x^n \partial y^m}$	$\frac{\partial^{n+m} f}{\partial x^n \partial y^m}$
4	`\pdr*{{x}[1]{y}[1]{f}[1+1]}`	$\frac{\partial^{1+1} f}{\partial x^1 \partial y^1}$	$\frac{\partial^{1+1} f}{\partial x^1 \partial y^1}$
5	`\pdr*{{x}{y}[n]{f}[n+1]}`	$\frac{\partial^{n+1} f}{\partial x \partial y^n}$	$\frac{\partial^{n+1} f}{\partial x \partial y^n}$

表 5　偏微分マクロ (リーマン幾何学の記法) の仕様確認

No	command	expected	result
1	`\pdrr{{x}{f}}`	$\partial_x f$	$\partial_x f$
2	`\pdrr{{i}{j}{f}}`	$\partial_i \partial_j f$	$\partial_i \partial_j f$
3	`\pdrr{{i}*{j}{f}}`	$\partial_i \partial^j f$	$\partial_i \partial^j f$
4	`\pdrr{*{i}{j}{f}}`	$\partial^i \partial_j f$	$\partial^i \partial_j f$

ソースコード 3　derivative パッケージの setup 例 3

```
\derivativesetup{
        nabla-deco-1 = ',
        nabla-deco-2 = '',
        nabla-deco-3 = _{\bm{r}'''},
        laplace = delta,
}
```

表 6　ベクトル演算子マクロの仕様確認。コード 3 による設定を適用した場合の挙動

No	command	expected	result
1	`\grad{f}`	∇f	∇f
2	`\div\bm{v}`	$\nabla \cdot \boldsymbol{v}$	$\nabla \cdot \boldsymbol{v}$
3	`\rot\bm{v}`	$\nabla \times \boldsymbol{v}$	$\nabla \times \boldsymbol{v}$
4	`\curl\bm{v}`	$\nabla \times \boldsymbol{v}$	$\nabla \times \boldsymbol{v}$
5	`\laplace{f}`	Δf	Δf
6	`\laplaced{f}`	Δf	Δf
7	`\laplacen{f}`	$\nabla^2 f$	$\nabla^2 f$
8	`\hesse{f}`	$\nabla \otimes \nabla f$	$\nabla \otimes \nabla f$
9	`\gradr{f}`	$\mathrm{grad}\, f$	$\mathrm{grad}\, f$
10	`\divr{\bm{v}}`	$\mathrm{div}\, \boldsymbol{v}$	$\mathrm{div}\, \boldsymbol{v}$
11	`\rotr{\bm{v}}`	$\mathrm{rot}\, \boldsymbol{v}$	$\mathrm{rot}\, \boldsymbol{v}$
12	`\curlr{\bm{v}}`	$\mathrm{curl}\, \boldsymbol{v}$	$\mathrm{curl}\, \boldsymbol{v}$
13	`\grad'{f}`	$\nabla' f$	$\nabla' f$
14	`\grad''{f}`	$\nabla'' f$	$\nabla'' f$
15	`\grad'''(\frac{f}{g})`	$\nabla_{\boldsymbol{r}'''} \left(\frac{f}{g}\right)$	$\nabla_{\boldsymbol{r}'''} \left(\frac{f}{g}\right)$
16	`\gradr''[f]`	$\mathrm{grad}''\, [f]$	$\mathrm{grad}''\, [f]$
17	`\laplacen''{f}`	$\nabla''^2 f$	$\nabla''^2 f$
18	`\hesse''!{f}`	$\nabla'' \otimes \nabla'' \{f\}$	$\nabla'' \otimes \nabla'' \{f\}$

表 7　汎関数微分マクロの仕様確認

No	command	expected	result
1	`\fdr{{f}{F}}`	$\dfrac{\delta F}{\delta f}$	$\dfrac{\delta F}{\delta f_1}$
2	`\fdr{{f_1}{f_2}{F}}`	$\dfrac{\delta^2 F}{\delta f_1 \delta f_2}$	$\dfrac{\delta^2 F}{\delta f_1 \delta f_2}$
3	`\fdr{{f_1(x)}{f_2(x')}{F}}`	$\dfrac{\delta^2 F}{\delta f_1(x) \delta f_2(x')}$	$\dfrac{\delta^2 F}{\delta f_1(x) \delta f_2(x')}$