

1 Tableaux de variations

1.1 Tableaux de variations type1

```

\begin{table-type1}[Scal=1.3,Bcolor=blue!90]{$x$}{$f(x)$}
\colX{$-\infty$}{$-\infty$}
\colC
\colX{$-1$}{$2\sqrt{2}$}{}
\colD
\colX{$+\infty$}{$-6$}
\end{table-type1}

```

x	$-\infty$	-1	$+\infty$
$f(x)$		$2\sqrt{2}$	
	$-\infty$		-6

```

\begin{table-type1}[]{$x$}{$f(x)$}
\colX{$-20$}{$-\infty$}
\colC
\colX{$-2$}{$2\sqrt{2}$}{}
\colV
\colX{$3$}{$2\sqrt{2}$}{}
\colD
\colX{$+\infty$}{$-\infty$}
\end{table-type1}

```

x	-20	-2	3	$+\infty$
$f(x)$		$2\sqrt{2}$	$2\sqrt{2}$	
	$-\infty$			$-\infty$

```

\begin{table-type1}[Xunit=1cm,Bcolor=cyan]{$x$}{$f(x)$}
\colND{$-20$}
\colX{}{$-\infty$}
\colC
\colX{}{$+\infty$}{}
\colNDV{$0$}
\colV
\colX{$3$}{$2\sqrt{2}$}{}
\colD
\colX{$+\infty$}{$-\infty$}
\end{table-type1}

```

x	-20	0	3	$+\infty$
$f(x)$		$+\infty$	$2\sqrt{2}$	
	$-\infty$			$-\infty$

1.2 Tableaux de variations type2

```

\begin{table-type2} [] {$x$} {$f'(x)$} {$f(x)$}
\collX{$-\infty$} {$-\infty$}
\collC
\collX[\Zro] {$-1$} {$2\sqrt{2}$} {}
\collD
\collX{$+\infty$} {$-6$}
\end{table-type2}

```

x	$-\infty$	-1	$+\infty$
$f'(x)$	$+$	\emptyset	$-$
$f(x)$	$-\infty$	$2\sqrt{2}$	-6

```

\begin{table-type2} [] {$x$} {$f'(x)$} {$f(x)$}
\collX{$-20$} {$-\infty$}
\collC
\collNdv{$-2$} {$2\sqrt{2}$} {}
\collV
\collX{$3$} {$2\sqrt{2}$} {}
\collD
\collX{$+\infty$} {$-\infty$}
\end{table-type2}

```

x	-20	-2	3	$+\infty$
$f'(x)$	$+$			$-$
$f(x)$	$-\infty$	$2\sqrt{2}$	$2\sqrt{2}$	$-\infty$

```

\begin{table-type2} [] {$x$} {$f'(x)$} {$f(x)$}
\collND{$-20$}
\collX{} {$-\infty$}
\collC
\collX{} {$+\infty$} {}
\collNDV{$0$}
\collV
\collNdv{$3$} {$2\sqrt{2}$} {}
\collD
\collX{$+\infty$} {$-\infty$}
\end{table-type2}

```

x	-20	0	3	$+\infty$
$f'(x)$		$+$		$-$
$f(x)$	$-\infty$	$+\infty$	$2\sqrt{2}$	$-\infty$

```

\begin{table-type2} [] {\$x\$}{\$f'(x)\$}{\$f(x)\$}
\collND{\$-20\$}
\collX{}{\$-\infty\$}
\collCz{\$-4\$}
\collX{}{\$+\infty\$}{}
\collNDV{\$0\$}
\collV
\collX[\Zro]{\$3\$}{\$2\sqrt{2}\$}{}
\collDz{\$5\$}
\collX{\$+\infty\$}{}{\$-\infty\$}
\end{table-type2}

```

x	-20	-4	0	3	5	$+\infty$
$f'(x)$		+ 0 +		0 - 0 -		
$f(x)$	$-\infty$	$+\infty$			$2\sqrt{2}$	$-\infty$

```

\begin{table-type2} [] {\$x\$}{\$f'(x)\$}{\$f(x)\$}
\collNd{\$-20\$}{}{\$-6\$}
\collCz{\$-4\$}
\collX[\Zro]{\$3\$}{\$2\sqrt{2}\$}{}
\collD
\collX{\$33\$}{}{\$-\frac{3}{2}\$}
\end{table-type2}

```

x	-20	-4	3	33
$f'(x)$		+ 0 +	0 -	
$f(x)$	-6	$2\sqrt{2}$		$-\frac{3}{2}$

```

\begin{table-type2} [] {\$x\$}{\$f'(x)\$}{\$f(x)\$}
\collX[\Zro]{\$2\$}{\$-6\$}{}
\collD
\collX[\Zro]{\$9\$}{\$2\sqrt{2}\$}
\collC
\collX{}{\$+\infty\$}{}
\collND{\$33\$}
\end{table-type2}

```

x	2	9	33
$f'(x)$	0 - 0 +		
$f(x)$	-6	$+\infty$	
		$2\sqrt{2}$	


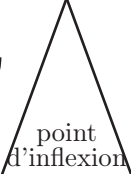

2 Tableaux de convexité

2.1 Tableaux de convexité type1

```

\begin{table-type1} [] {$x$} {$(\mathcal{C}_f)$}
\colX{$-\infty$}{}{}
\colCvx
\colIflx{$3$}
\colCcv
\colX{$+\infty$}{}{}
\end{table-type1}


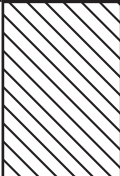

```

x	$-\infty$	3	$+\infty$
(C_f)			

```

\begin{table-type1} [] {$x$} {$(\mathcal{C}_f)$}
\colX{$-\infty$}{}{}
\colCvx
\colX{$-2$}{}{}
\colV
\colX{$3$}{}{}
\colCcv
\colX{$+\infty$}{}{}
\end{table-type1}


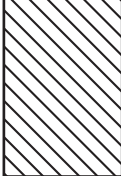


```

x	$-\infty$	-2	3	$+\infty$
(C_f)				

```

\begin{table-type1} [] {$x$} {$(\mathcal{C}_f)$}
\colX{$-\infty$}{}{}
\colCcv
\colX{$-2$}{}{}
\colV
\colNDV{$3$}
\colX{}{}{}
\colCvx
\colX{}{}{}
\colND{$30$}
\end{table-type1}

```


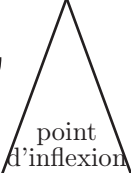

x	$-\infty$	-2	3	30
(C_f)				

2.2 Tableaux de convexité type2

```

\begin{table-type2} [] {$x$} {$f''(x)$} {$(\mathcal{C}_f)$}
\collX{$-\infty$}{}
\collCvx
\collIflx{$3$}
\collCcv
\collX{$+\infty$}{}
\end{table-type2}

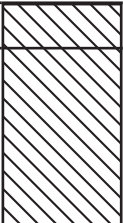

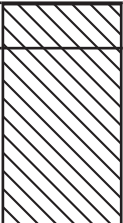

```

x	$-\infty$	3	$+\infty$
$f''(x)$	$+$	0	$-$
(\mathcal{C}_f)			

```

\begin{table-type2} [] {$x$} {$f''(x)$} {$(\mathcal{C}_f)$}
\collX{$-\infty$}{}
\collCvx
\collX{$-2$}{}
\collV
\collX{$3$}{}
\collCcv
\collX{$+\infty$}{}
\end{table-type2}

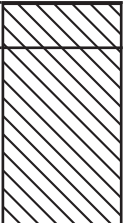

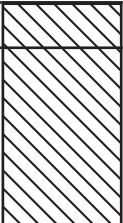

```

x	$-\infty$	-2	3	$+\infty$
$f''(x)$	$+$		$-$	
(\mathcal{C}_f)				

```

\begin{table-type2} [] {$x$} {$f''(x)$} {$(\mathcal{C}_f)$}
\collX{$-\infty$}{}
\collCcv
\collX{$-2$}{}
\collV
\collNDV{$3$}
\collX{}{}
\collCvx
\collX{}{}
\collND{$30$}
\end{table-type2}


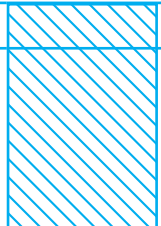

```

x	$-\infty$	-2	3	30
$f''(x)$	$-$		$+$	
(\mathcal{C}_f)				

```

\begin{table-type2}[Xunit=1cm,Bcolor=cyan]{x}{f''(x)}{\mathcal{C}_f}
\collX{\-\infty}{}
\collCvz{-7}
\collX{-2}{}
\collV
\collNDV{3}
\collX{}{}
\collCvz{4}
\collX{}{}
\collND{30}
\end{table-type2}


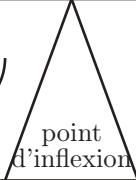

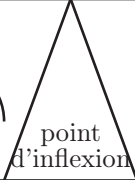

```

x	$-\infty$	-7	-2	3	4	30	
$f''(x)$	$-$	0	$-$		$+$	0	$+$
(\mathcal{C}_f)							

```

\begin{table-type2}[] {x}{f''(x)}{\mathcal{C}_f}
\collX[\Zro]{-3}{}
\collCvx
\collIflx{-1}
\collCv
\collIflx{0}
\collCvx
\collX{\+\infty}{}
\end{table-type2}

```

x	-3	-1	0	$+\infty$			
$f''(x)$	0	$+$	0	$-$	0	$+$	
(\mathcal{C}_f)							

```

\begin{table-type2}[] {x}{f''(x)}{\mathcal{C}_f}
\collX[\Zro]{-3}{}
\collCvx
\collX{}{}
\collND{1}{}
\collX{}{}
\collCvx
\collX{\frac{11}{2}}{}
\end{table-type2}

```

x	-3	1	$\frac{11}{2}$
$f''(x)$	0	$+$	$+$
(\mathcal{C}_f)	