Math-Symbols-in-LATEX-Manual

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Version: v1.2.5.2, Last Update: December 2, 2017

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2.3 Transposed Matrix Notations

```
\mathbf{A}^T
                           \mathbf{H}^T
                                                                                   \mathbf{V}^T
                                                                                                               \mathbf{\Gamma}^T
                                                                                                                                                      \Upsilon^T
                                                        \mathbf{O}^T
           \mmat
                                        \mmht
                                                                   \mmot
                                                                                                \mmvt
                                                                                                                           \mmgammat
                                                                                                                                                                  \mmupsilont
                                                                                   \mathbf{W}^T
                                                                                                                \mathbf{\Delta}^T
                           \mathbf{I}^T
\mathbf{B}^T
           \mmbt
                                        \mmit
                                                       \mathbf{P}^T
                                                                   \mmpt
                                                                                                \mmwt
                                                                                                                           \mmdeltat
                                                                                                                                                                  \mmphit
                                                                                                               \mathbf{\Theta}^T
\mathbf{C}^T
                           \mathbf{J}^T
                                                       \mathbf{Q}^T
                                                                                   \mathbf{X}^T
                                                                                                                                                       \mathbf{\Psi}^T
                                                                                                \mmxt
           \mmct
                                        \mmjt
                                                                   \mmqt
                                                                                                                            \mmthetat
                                                                                                                                                                  \mmpsit
                                                                                                                \mathbf{\Lambda}^T
\mathbf{D}^T
                           \mathbf{K}^T
                                                                                   \mathbf{Y}^T
                                                                                                                                                      \mathbf{\Omega}^T
           \mmdt
                                        \mmkt
                                                       \mathbf{R}^T
                                                                   \mmrt
                                                                                                \mmyt
                                                                                                                           \mmlambdat
                                                                                                                                                                  \mmomegat
\mathbf{E}^T
                           \mathbf{L}^T
                                                        \mathbf{S}^T
                                                                                   \mathbf{Z}^T
                                                                                                               \mathbf{\Xi}^T
           \mmet
                                        \mmlt
                                                                   \mmst
                                                                                                \mmzt
                                                                                                                            \mmxit
\mathbf{F}^T
                                                       \mathbf{T}^T
                                                                                                                \mathbf{\Pi}^T
                           \mathbf{M}^T
           \mmft
                                        \mmmt
                                                                   \mmtt
                                                                                                                           \mmpit
\mathbf{G}^T
                           \mathbf{N}^T
                                                                                                                \mathbf{\Sigma}^T
                                                        \mathbf{U}^T
           \mmgt
                                        \mmnt
                                                                   \mmut
                                                                                                                           \mmsigmat
```

2.4 Special vector and matrix notation

```
0 \mvzero 1 \mvone 0 \mmzero 1 \mmone
```

3 Useful Functions and Operators

```
d
    \diff
                 diag
                        \diag
                                  lcm
                                           \lcm
                                                    var
                                                            \var
                                                                      argmin
                                                                                 \argmin
                                                                                             card
                                                                                                     \card
D
    \Diff
                 eig
                        \eig
                                  rand
                                           \rand
                                                    corr
                                                            \corr
                                                                      argmax
                                                                                 \argmax
                                                                                             dist
                                                                                                     \dist
\mathbf{E}
                        \tr
    \Expect
                 \operatorname{tr}
                                  mean
                                           \mean
                                                                                 \argopt
                                                    conv
                                                            \conv
                                                                      argopt
```

4 Useful Aliases and Generators

- \fracdiff{}{}: frac & diff operator, also provide \dfracdiff{}{} mode. For example, \fracdiff{ u}{x} gets $\frac{\mathrm{d}^u}{\mathrm{d}x}$, \dfracdiff{^2u}{x^2} gets $\frac{\mathrm{d}^2u}{\mathrm{d}x^2}$
- \fracdiffs{}: special frac & diff operator. For example, \fracdiffs{x} gets $\frac{d}{dx}$, \dfracdiffs{y} gets $\frac{d}{dy}$
- \fracpartial{}{}: frac & partial operator, also provide \dfracpartial{}{} mode. For example, \fracpartial{u}{x} gets $\frac{\partial u}{\partial x}$, \dfracpartial{^2u}{x^2} gets $\frac{\partial^2 u}{\partial x^2}$
- \fracpartials{}: special frac & partial operator. For example, \fracpartials{x} gets $\frac{\partial}{\partial x}$, \delta dfracpartials{y} gets $\frac{\partial}{\partial y}$
- \mclosure{}, \mclosuresquare{}, \mclosurebrace{}: auto height brackets, eg $\left\{\left[\left(a^2+b^2\right)^2\right]^2\right\}$
- \mfuncat{}{}: create a symbol |, eg \mfuncat{\fracpartial{u}{t}}{x=5} gets $\frac{\partial u}{\partial t}\big|_{x=5}$
- \mvct{}{}, \mvctz{}{}: row vector creator, eg \mvct{a}{n} gets (a_1, a_2, \ldots, a_n) , \mvctz{a}{n} gets (a_0, a_1, \ldots, a_n)
- \mvctt{}{}, \mvctzt{}{}: column vector creator, eg \mvctt{a}{n} gets $(a_1, a_2, \dots, a_n)^T$, \mvctzt{a}{n} gets $(a_0, a_1, \dots, a_n)^T$
- \mequlist{}: provided a list of equations, eg \mequlist{x + y \&= 10 \\ 4x + 2y \&= 30} gets $\begin{cases} x+y=10 \\ 4x+2y=30 \end{cases}$, also provide environment equlist, which is similar with the case environment