LA1 - Version 2 - Exercise 4

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```
# initial setup
options(scipen = 999)
options(tinytex.verbose = TRUE)
library(matlib)
library(knitr)
library(rmarkdown)
library(quarto)
library(tinytex)
library(pandoc)
knitr::opts_chunk$set(echo=TRUE, message=FALSE, warning=FALSE, fig.width=6, fig.height=6)
```

Linear equations

```
A4 <- matrix(
        c( 1,-1,-2,
           0, 1, 3), 2, 3, byrow=TRUE)

colnames(A4) <- paste0('x', 1:3) # add x1-x3 to columns

b4 <- c(1, -2)
```

Equation solution

```
Solve(A4, b4)
```

```
## x1     + x3  =  -1
##   x2 + 3*x3  =  -2
```

Code the exercise results in R matlib

```
Eqn(
    "\\mathbf{x} = ",
    "(-1-t) * ",
    latexMatrix(matrix(c(-2,1,2), nrow=3, ncol=1)),
    "(5+2t) * ",
    latexMatrix(matrix(c(-2,0,1), nrow=3, ncol=1)),
    "t * ",
    latexMatrix(matrix(c(-1,1,1), nrow=3, ncol=1)),
    Eqn_hspace(mid='='),
    latexMatrix(matrix(c("6-5t", "-1", "-2+t"), nrow = 3, ncol = 1))
)
```

Show exercise solution (R's Latex output)

$$\mathbf{x} = (-1-t) * \begin{pmatrix} -2 \\ 1 \\ 2 \end{pmatrix} (5+2t) * \begin{pmatrix} -2 \\ 0 \\ 1 \end{pmatrix} t * \begin{pmatrix} -1 \\ 1 \\ 1 \end{pmatrix} \quad = \quad \begin{pmatrix} 6-5t \\ -1 \\ -2+t \end{pmatrix}$$