

# **Is it lunchtime yet**

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# Contents

<b>1</b>	<b>For Forever</b>	<b>2</b>
1.1	All we see is light, for forever . . . . .	2
1.1.1	Small is big . . . . .	2
<b>2</b>	<b>Math Equations</b>	<b>2</b>
2.1	Alignment . . . . .	2
2.2	Would you like some more . . . . .	3
2.3	Trying out matrices . . . . .	3
<b>3</b>	<b>Captioned Images in LateX</b>	<b>5</b>
3.1	Temperature of Boston . . . . .	5
3.2	Adding multiple subfigure environments within a figure environment. . . . .	5
3.2.1	Too much coffee? . . . . .	6
<b>4</b>	<b>Ending</b>	<b>8</b>

# 1 For Forever

Dear Evan Hansen, today is going to be a great day and here is why.  
You can *lean* on me! You can **count** on me

## 1.1 All we see is light, for forever

Excited for Hamilton Tour in 2022.

### 1.1.1 Small is **big**

What's cookin'

What to do when you feel hungry

Time to eat out! Have not had a chance in so long.

# 2 Math Equations

A few simple ones

$$f(x) = x^2$$

$$1 + 2 = 3$$

$$1 = 3 - 2$$

## 2.1 Alignment

Trying out alignment “=”

$$\begin{aligned} f(x) &= x^2 \\ 1 + 2 &= 3 \\ 1 &= 3 - 2 \end{aligned}$$

LOL I don't quite like how this looks.

Trying out alignment “2”

$$\begin{aligned} 1+2 &= 3 \\ 1 &= 3-2 \end{aligned}$$

This is a bit funky.

## 2.2 Would you like some more

Some simple LaTeX math functions

$$\begin{aligned} f(x) &= x^2 \\ g(x) &= \frac{1}{x} \\ y(x) &= \left( \frac{1}{\sqrt{x}} \right) \\ F(x) &= \int_b^a \frac{1}{3} x^3 \end{aligned}$$

More sophisticated functions can happen by combining various commands

## 2.3 Trying out matrices

Matrices inside parentheses

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

Matrices without brackets

$$\begin{array}{ccc} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{array}$$

Matrices have to happen within the equation environment

$$\begin{matrix} 1 & 0 \\ 0 & 1 \end{matrix}$$

## Some more varieties

$$\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$$

Here are examples with matrix 2x2 with pmatrix, bmatrix, vmatrix, Vmatrix environments:

$$\begin{array}{cc} a & b \\ c & d \end{array} \quad \left( \begin{array}{cc} a & b \\ c & d \end{array} \right) \quad \left[ \begin{array}{cc} a & b \\ c & d \end{array} \right] \quad \left| \begin{array}{cc} a & b \\ c & d \end{array} \right| \quad \left\| \begin{array}{cc} a & b \\ c & d \end{array} \right\|$$

**Small matrix environment** For more, refer to <https://www.math-linux.com/latex-26/faq/latex-faq/article/how-to-write-matrices-in-latex-matrix-pmatrix-bmatrix-vmatrix-vmatrix>

I love small matrices such as  $\left( \begin{array}{cc} a & b \\ c & d \end{array} \right)$

### 3 Captioned Images in LateX

#### 3.1 Temperature of Boston

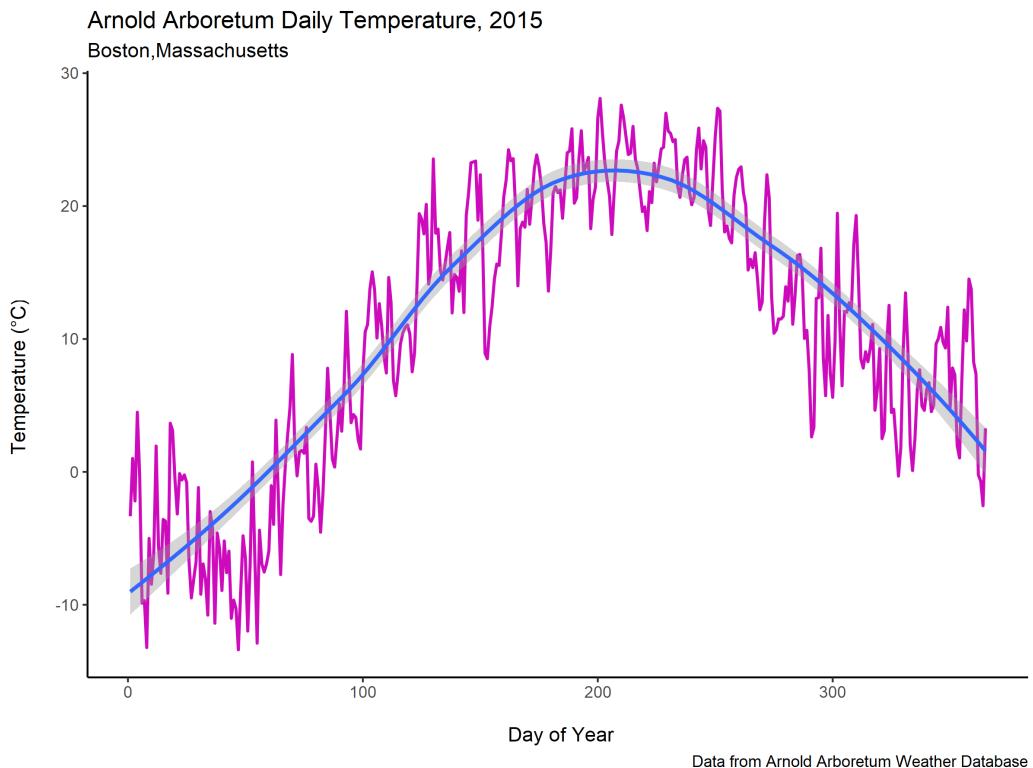
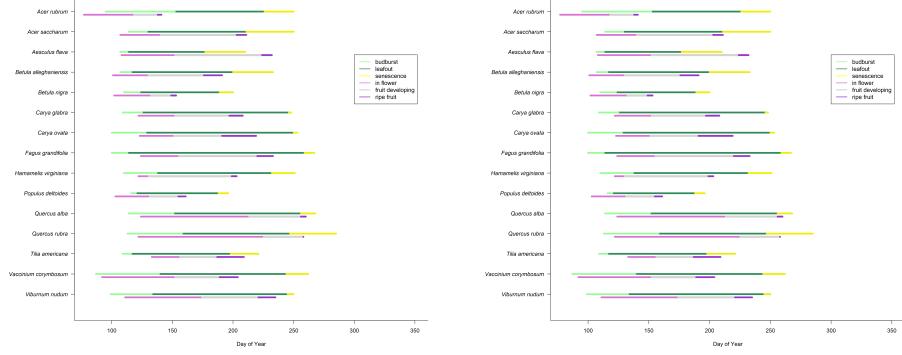


Figure 1: Temperature plot made using ggplot2, May 28 2021

Figure 1 shows temperature plot.

At some point, you will notice that the figure doesn't necessarily show up in the exact place as you put your code in the .tex file. If your document contains a lot of text, it's possible that LaTeX will put the picture on the next page, or any other page where it finds sufficient space. To prevent this behavior, it's necessary to set the **float** value for the figure environment.

#### 3.2 Adding multiple subfigure environments within a figure environment.



(a) Mean plot.

(b) More mean plot.

Figure 2: The same mean plot. Two times.

### 3.2.1 Too much coffee?



(a) Coffee.



(b) More coffee.



(c) Tasty coffee.



(d) Too much coffee.

Figure 3: Lots of coffee and I don't even like coffee. *Images sourced from Unsplash.*

## **4 Ending**

... and here it ends.

**will continue tmrw** at <https://latex-tutorial.com/tutorials/amsmath/>