An Example of the Usage of the Tufte-Handout Style[1]

[1] Inspired by Edward R. Tufte!

The Tufte-LaTeX Developers

September 5, 2015

This is the abstract. Physics is one of the oldest academic disciplines, perhaps the oldest through its inclusion of astronomy. Over the last two millennia, physics was a part of natural philosophy along with chemistry, certain branches of mathematics, and biology, but during the Scientific Revolution in the 17th century, the natural sciences emerged as unique research programs in their own right.

Equations and Other Math

We can write text text text text text text text text text text text text text xt text text text text text text text text text text text and the put an equation like $f(x) = x + 1$ inline [2] Then we can write an equation by itself.

[2] This is known as the "Nice Equation." Check my footnote.

$$y = \frac{a}{b} + \omega + \alpha + \Delta x + \overrightarrow{v} + t_0 + e^{67t} + r + \hat{r}$$

Above we see fractions, greek letters, over arrows, subscripts, superscripts and hats.

$$z = \int_0^5 v(t)\, dt + \sum_{n=0}^{\infty} a_n + \lim_{\Delta \to 0} \frac{\Delta \overrightarrow{z}}{\Delta t}$$

Above we see an integral and a space and a summation and a limit with a special script r.

$$f(x) = \overrightarrow{x} \cdot \overrightarrow{x} + |\overrightarrow{x} \times \overrightarrow{x}|$$

Above dot products and cross products and absolute value.

$$t = \overbrace{153}^{Value}\ \underbrace{\text{seconds}}_{Unit} \longrightarrow \text{fun}$$

Above we are using overbraces, underbraces an arrow and text inside a math equation.

$$\begin{pmatrix} x_1 \\ y_1 \\ z_1 \end{pmatrix}$$

Above is a column vector written with **array** command. Note the use of the big parenthesis.

$$0.25 \text{ mile } \frac{1609 \text{ meters}}{1 \text{ mile}} = \frac{0.25 \cdot 1609}{1} \cancel{\text{mile}} \frac{\text{meters}}{\cancel{\text{mile}}} = 402 \text{ meters}$$

Above we use cancel.

$$y = x \tag{1}$$

Above numbered eqn.

$$y = x^2 \tag{2}$$

Above numbered eqn we can cite like this.
Blah blah blah as shown in Equation 2.
And don't forget scientific notation and units.

$$H = 1.46 \times 10^{-9} \left[\frac{\text{Joules}}{\text{second}} \right]$$

Above vertical space and now we start a new page.

LISTS AND TABLES

- The first item
- The second item
- The third etc ...

1. The first item
2. The second item
3. The third etc ...

meter The meter is the length of the path travelled by light in vacuum during a tim interval of 1/299,792,458 of a second.

second The second is the duration of 9,192,631,770 periods of the radiation corresponding

Unit Name	Symbol	Quantity
meter	m	distance
kilogram	kg	mass
radian	rad	angle

GRAPHING

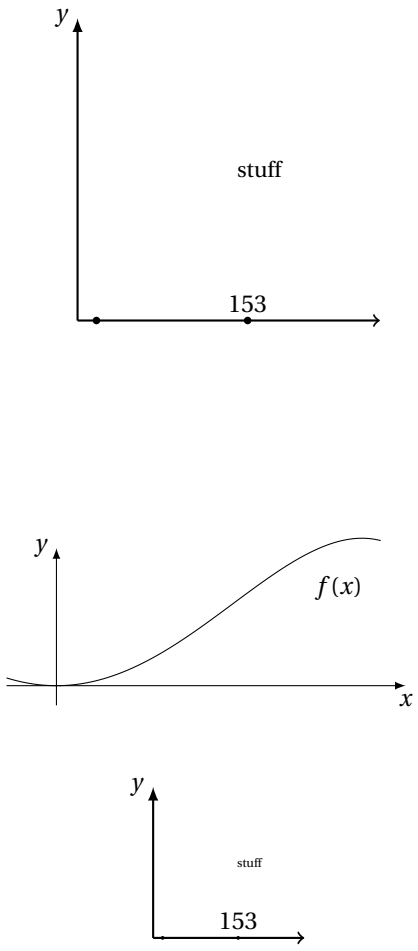
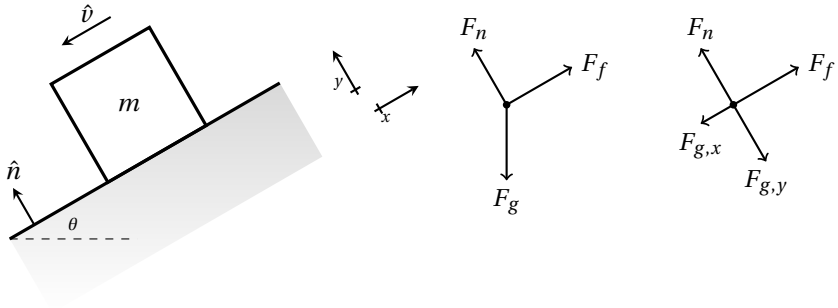


Figure 1: This caption is amazing.

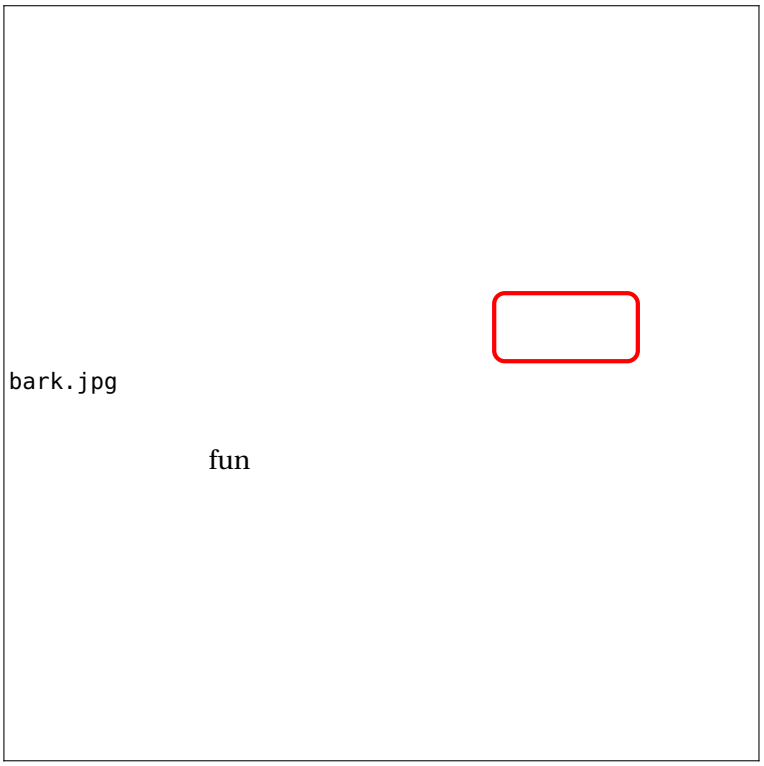
This is proven beyond a shadow of a doubt by Figure 1



IMAGES

You can include images in your document.

You can even draw on your images to help label them.



VECTOR OPERATIONS

DOT PRODUCT

$$\vec{r}_1 \cdot \vec{r}_2 = \begin{pmatrix} x_1 \\ y_1 \\ z_1 \end{pmatrix} \begin{pmatrix} x_2 & y_2 & z_2 \end{pmatrix} = x_1 x_2 + y_1 y_2 + z_1 z_2$$

$$|\overrightarrow{r}| = r = \sqrt{\overrightarrow{r} \cdot \overrightarrow{r}} = \sqrt{x^2 + y^2 + z^2}$$

$$\overrightarrow{r_1} \cdot \overrightarrow{r_2} = r_1 r_2 \cos\gamma$$

Cross Product

$$\overrightarrow{r_1} \times \overrightarrow{r_2} = \begin{vmatrix} \hat{x} & \hat{y} & \hat{z} \\ x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \end{vmatrix} = (y_1 z_2 - z_1 y_2)\hat{x} + (z_1 x_2 - x_1 z_2)\hat{y} + (x_1 y_2 - y_1 x_2)\hat{z}$$

$$|\overrightarrow{r_1} \times \overrightarrow{r_2}| = r_1 r_2 \sin\gamma$$

Finally we do a citation. [3]

[3]

And if you would like to represent some code you may use "verbatim" like this.

```
for i in range(1, 5):
  print i
else:
  print "This is some Python code"
```

Then redefine the background shade color to distinguish output.

```
1
2
3
4
5
```

```
for i in range(1, 5):
  print i
else:
  print "This is some Python code"
```