Homework 1: \LaTeX features

your name here

March 3, 2011

Produce an article that has the features in this page.

1 Some nice formatting

You should have a paragraph that has some text that is \emph{in italics} and some that is in \textbf{bold face}! In your paragraph you should quote someone saying something like “Whoever undertakes to set himself up as a judge of Truth and Knowledge is shipwrecked by the laughter of the gods.”

Also you should include some computer code, any language, or just pseudo code, and it should appear in a non-proportional font such as

\begin{verbatim}
i=1
While (i < 10)
print (i)
i = 1+2
end while
\end{verbatim}

Next you should have some lists including nested enumerated,

1. Mercury

\begin{itemize}
\item Moon
\end{itemize}

2. Venus

3. Earth

\begin{itemize}
\item Moon
\end{itemize}

4. Mars

\begin{itemize}
\item Diemos
\item Phobos
\end{itemize}

with the nested list being an itemized list (bullets).

Try a description list also

\begin{description}
\item[spouse] someone to share your life with.
\item[house] place to sleep
\item[horse] beast of transport
\end{description}

Hope you make a good choice.

2 Tables and figures

Produce two tables such Table 1 or Table 2

Table 1: Here is the solar system info again, caption at top

<table>
<thead>
<tr>
<th>Planet</th>
<th>Moons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury</td>
<td>0</td>
</tr>
<tr>
<td>Venus</td>
<td>0</td>
</tr>
<tr>
<td>Earth</td>
<td>1</td>
</tr>
<tr>
<td>Mars</td>
<td>2</td>
</tr>
</tbody>
</table>

Now download a jpg from the web of something—your choice (and notice that I have a long em-dash). Put it into the document and make sure that it has a caption, and an appropriate length.

\footnote{Tell who wrote the quote in a footnote. This was from Albert Einstein.}
Be sure to get the captions in the correct places

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<td>Earth</td>
<td>1</td>
</tr>
<tr>
<td>Mars</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2: Here is the solar system info again, caption at bottom

Figure 1: I enjoyed this album, and look at the neat cover art!

Add a paragraph explaining why you chose the image. For me, *Revolver* was a great Beatles LP released while I was in college. The songs still hold up well. Of course I could have chosen any number of other albums that I like.

3 Math

By convention, symbols should be italicized, and \LaTeX automatically does that. Some things such as units and function names (sin, cos, log) are not italicized. Start with some symbols defined in line. I will choose time, $t$, position $x$, velocity $v$, and acceleration, $a$. I am working in 1D.

We define velocity as

$$v = \frac{dx}{dt}$$  \hfill (1)

and your equation should have a fraction in it.

It is easy to put in Greek symbols as well, and also superscripts and subscripts. Notice that the cosine is in normal typeface.

$$I = A_0^2 \cos^2(\omega t + \phi_0)$$  \hfill (2)

You may want an equation followed by units or a brief explanation,

$$I_0 = 1.0 \times 10^{-12} \text{ W/m}^2$$  \hfill (3)

Notice that I have a superscript of 3 characters here.

Equation arrays are nice in some applications. Here the equal signs line up. Notice that each equation is numbered separately.

$$x = x_0 + v_0 t + \frac{1}{2} a t^2$$  \hfill (4)

$$v = v_0 + a t$$  \hfill (5)

Matrixes (and tensors) are common in physics, so include a $3 \times 3$ matrix in an equation like

$$\vec{A} \times \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ A_x & A_y & A_z \\ B_x & B_y & B_z \end{vmatrix}$$  \hfill (6)

Special symbols like the nabla, $\nabla$, exist. Please write the differential form of Maxwell’s equations in your homework.