Math 300 Test 1

You have 50 minutes. All paper notes and books are permitted, but no electronic devices are allowed.

1. (5 pts) What does GIF stand for? What are the advantages and disadvantages of the format?

2. (10 pts) Write \LaTeX commands to typeset

\[
A = \begin{bmatrix}
1 \\
2 \\
0 \\
1
\end{bmatrix}
\]

3. (6 pts) Write MathML commands to typeset

\[
A = \begin{bmatrix}
\frac{1}{2} \\
1 \\
0 \\
1
\end{bmatrix}
\]

4. (10 pts) Write CSS to make all paragraphs have a border that is green, dashed, and 3 pixels thick.

5. (15 pts) Write \LaTeX commands to typeset

\[
y_{\sigma, \mu}(x) = \begin{cases} 
\sigma & x < 0 \\
\mu & \text{otherwise}
\end{cases}
\]
6. (5 pts) Explain how computers treat floating point numbers differently from integers.

7. (10 pts) Write LaTeX to display the following equations:

\[ x = A \cos \pi t \]
\[ y = A \sin(\pi t + \phi). \]

8. (10 pts) Write a new LaTeX command called \texttt{pencilsection} that places an image called \texttt{pencil.jpg} in front of the section title. What package(s) do you need to load to make this work?

9. (14 pts) Write LaTeX commands to make the following table.

<table>
<thead>
<tr>
<th>Some Breeds of Cats</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Breed</td>
<td>Rating</td>
</tr>
<tr>
<td>Persian</td>
<td>6</td>
</tr>
<tr>
<td>Cool</td>
<td>7</td>
</tr>
<tr>
<td>Fat</td>
<td>1</td>
</tr>
<tr>
<td>LOL</td>
<td>10</td>
</tr>
</tbody>
</table>

10. (5 pts) How big is an em, and why would you use that unit?

11. (10 pts) Explain what you would do to make LaTeX \texttt{label} and \texttt{refer} to the equation \( f(x) = 2x + 5 \) for you. Be specific, using example commands as required.