

Math 300 Test 2

Name: _____

- (10 pts) Write L^AT_EX commands to typeset $L = \int_a^b \sqrt{1 + \left[\frac{dy}{dx}\right]^2} dx$.
- (10 pts) Write MathML commands to typeset $L = \int_a^b \sqrt{1 + \left[\frac{dy}{dx}\right]^2} dx$.
- (12 pts) Write Matlab commands to evaluate a floating point approximation to $\sum_{n=1}^N \frac{1}{n^2}$ when $N = 223$.
- (4 pts) Suppose we load Pylab using the statement `from pylab import *`. Write a command to create a 100×100 identity matrix. Name the array `watchful`.
- (4 pts) Rewrite the command(s) from the previous question supposing that Pylab was loaded using the statement `import pylab as pl`.
- (10 pts) Write Python commands to make a 21×2 array called `morrison` containing twos in the first column, and the vector $(1, 3, 5, \dots, 19, 0, 0, 0, \dots, 0)^T$ in the second column.

7. (10 pts) Given that we loaded Sympy as `sp`, what Python command(s) would you use to evaluate $\int_0^{\frac{\pi}{4}} \sqrt{1 + \tan^3(\pi x)} dx$ to 51 decimal places?
8. (5 pts) Write Matlab commands to plot $\sqrt{2 - x^2}$ over the real domain where its value is real using points spaced at intervals of 0.1. The curve should be green.
9. (5 pts) Convert the hex number 10F to decimal.
10. (10 pts) Suppose we have a Python function run as `temp(t)` that returns the temperature of a cup of coffee at time t . Write Python commands that print the string "The temperature of our 'java' at time 5 is ", and then puts in the result of the function.
11. (5 pts) Write a CSS specification to cause all paragraphs of class `chill` to appear in cyan colored bold face.
12. (15 pts) Write a Python function that can be called as `onenorm(x)` that computes and returns $\sum_{i=1}^n |x_i|$, where $x = (x_1, x_2, \dots, x_n)^T$.