

Show all work.

- 1) (1 pt) For each quantity in the list below, indicate if the quantity is an integer or a double precision variable.

- a) The length of a side of a triangle
- b) The number of marbles in a bag
- c) The volume of a pyramid
- d) The temperature of a sidewalk
- e) The number of people in front of you in line at a store

- 2) (4 pts) Each of the problems below has a problem with the transcription of the given formula into MATLAB. Correct the transcription error for each case. In addition, use MATLAB to compute the value of the expression for $x = \pi, y = -3$.

a)

$$z = \frac{1}{x + y}$$

>> z = (1/x+y)

b)

$$z = \sqrt[4]{x}$$

>> z = x^1/4

c)

$$z = \cos^2(x + y)$$

>> z = cos(x+y^2)

d)

$$z = x^2 - 4xy + y^2$$

>> z = x^2 - 4xy + y^2

- 3) (3 pts) There is a good reason why MATLAB has the `nthroot` function that is listed at the end of the Introduction to MATLAB notes. Suppose you wanted to compute the cube root of -1. Type the following into MATLAB

```
>> x = -1;  
>> y = x^(1/3)
```

Do you get the result you expected? Why do you get the answer you are getting?

- 4) (1 pt) You have probably spent most of your academic life being told that you can't take the natural logarithm of a negative number. Use MATLAB to compute the natural logarithm of any negative number you want. What type of number do you get?