Your Name: Version b Key

Section Time/Section #: _____/_____

Your TA's Name: _____

CS 221 Computer Science for Engineers	Fall 2011
In-Class Quiz 1	
4 October 2011	*Version b*

- Write your **Name** and **Section Number/Time** on **this page** (top-right corner).
- Write all your answers **NEATLY** on this paper.
- Answer all parts of all questions. If you need more space, use the back of the page, but **indicate that you have done so!**
- **Calculators may NOT be used.**
- You have **30 minutes.**

1. Suppose you are solving a problem based on the equation $z^2 = x^2 - y^2 - y\cos\theta$, using Excel. The cells A2, A3, and A4 contain **given** values of x, y, and θ, respectively. In the space below, write down exactly what you would type in cell B5 so that it displays the correct value of z for the given x, y and θ. Assume the value of θ is in radians. You may use any form of reference you like.

   =SQRT(A2^2 - A3^2 - A3*COS(A4))

   or =(A3^2 - A3^2 - A3*COS(A4))^0.5

2. Assume certain cells in an Excel worksheet have the following contents:

   A1: 2
   B1: 5
   C1: =A1*B1
   A2: 3
   B2: 10

   Suppose now that you **Copy** the contents of C1 and **Paste** them into cell C2. What value will be displayed in cell C2?

   30

3. Suppose cell F10 in an Excel worksheet contains the expression:

```
=IF(AND(D5<=100,D5>50),D5,"")
```

What would Excel display in cell F10 (after the spreadsheet is recalculated) if the value in cell D5 is:

(a) 400.1234 "" (or empty string, or nothing)

(b) 51 51

4. Convert the following decimal numbers to binary (base 2) representation. **Show your work, or you will not get credit.** The first one is done for you as an example.

79 = 64 + 8 + 2 + 1 = 1001011

(a) 65 = 64+1 = 1000001

(b) 420 = 256+128+32+4 = 110100100

5. Write down the number of significant digits in each of the following. If it cannot be determined, write "can't tell":

(a) 100001.0 7

(b) 0.00035 2

(c) 6.7×10^{15} 2

(d) 1608 4

6. Convert the following binary numbers to decimal representation. **Show your work, or you will not get credit.** The first one is done for you as an example.

10101 = 16 + 4 + 1 = 21

(a) 1101 = 8+4+1 = 13

(b) 111010001 = 256+128+64+16+1 = 465

7. Circle the value that is closest to the **largest positive** (double-precision) floating point value that can result from a calculation in MATLAB:

(a) `-1.79769e+308`

(b) `999999999999999.999999999999`

(c) `0.0000000000001`

(d) `2.22507e+308`

(e) `1.79769e-308`

8. Write a MATLAB conditional ("if") command that prints "YES" if the value of the variable `rating` exceeds 10, "MAYBE" if the score is greater than 0 but not greater than 10, and "NO" otherwise. (Assume `rating` has already been given a value. Recall that the **disp()** function prints its argument.)

```
if rating > 10
    disp('YES')
elseif rating > 0
    disp('MAYBE')
else
    disp('NO')
end
```

9. Assume the following lines have already been typed at the MATLAB command prompt (indicated by >>):

```
>>  a = 10;
>>  b = 12;
>>  c = 3;
```

Write down the output you would expect to see if you now type the following:

(a) `d = c*(b+1) + a^2`

```
d =
   139
```

(i.e., $3 \cdot (13) + 10^2$)

(b) `a + b * c`

```
ans =
    46
```

(i.e., $10 + (12 \cdot 3)$)

10. Write down the output you would expect from the following command (assume variables have the same initial values as in the previous problem):

```
if a <= b && c > b
    a = a - b
else
    b = a + b
end
```

```
b =
    22
```