LA # 3 (due 1/21/20)

CE 113

1) Convert the following binary numbers to base-10. Do this BY HAND.
   a. 1101
   b. 10101

2) Convert the following base-10 numbers and words to binary. For the words, assume that
   the letter “A” corresponds to 1, “B” corresponds to 2, and so on. Do this BY HAND.
   c. 17
   d. 63
   e. 1024
   f. HI

3) What exactly will MATLAB display given the following commands?
   a. >> 3 + 7
   b. >> A = 2; B = 3
   c. >> x = 1; y = 2; z = x.^2 + y.^2; z
   d. >> ‘Hello World!’
   e. >> ‘Hello World!’

4) Use the command window in MATLAB to generate the output values and then plot the
   following functions. Make sure to properly label the relevant parts of the plots.
   a. $y = -3x + 5$ on the domain $0 \leq x \leq 10$ with increments of 1.
   b. $g(x) = x^2 - 5$ on the domain $-10 \leq x \leq 10$ with increments of 2.
   c. $h(t) = \ln(t)$ on the domain $0 \leq t \leq 50$ with increments of 2.
   d. $x(t) = \text{Acos}(Bt) + C$ where $A = 3$, $B = 2$, and $C = 4$ on the domain $0 \leq t \leq 5$ with
      increments of 0.05.
   e. $z(x,y) = x^2 + y^2$ on the domains $-5 \leq x \leq 5$ and $-5 \leq y \leq 5$ with increments of 1.

5) Define the terms flow chart and algorithm in regards to computer programming.