**CHAPTER 1: LESSON 1**

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| **Objective :** | Complex numbers: MATLAB recognizes the letters i and j as the imaginary number √−1. A complex number 2 + 5i may be input as 2+5i or 2+5\*i in MATLA . The former case is always interpreted as a complex number whereas the latter case is taken as complex only if i has not been assigned any local value. The same is true for j. This kind of context dependence, for better or worse, pervades MATLAB. Compute the following quantities.  • 1+3i/1−3i. Can you check the result by hand calculation?  • eiπ/4.Check the Euler’s Formula eix = cosx+isinx by computing the right hand side too,  • Execute the commands exp(pi/2\*i) and exp(pi/2i). |
| **MATLAB**  **Code:** | a = (1+3i)/(1-3i);  fprintf('(1+3i)/(1-3i) = %f+%fi \n\n',real(a),imag(a))  b = exp(i\*pi/4);  fprintf('exp(i\*pi/4) = %f+%fi\n\n',real(b),imag(b))  rhs = cos(pi/4)+ i\*sin(pi/4)    c = exp(pi/2\*i);  fprintf('exp(pi/2\*i) = %f+%fi\n\n',real(c),imag(c))    d = exp(pi/2i);  fprintf('exp(pi/2i) = %f+%fi\n\n',real(d),imag(d)) |
| **Output:** | (1+3i)/(1-3i) = -0.800000+0.600000i  exp(i\*pi/4) = 0.707107+0.707107i  rhs = 0.7071 + 0.7071i  exp(pi/2\*i) = 0.000000+1.000000i  exp(pi/2i) = 0.000000+-1.000000i |