

ENSC 180: Introduction to Engineering Analysis

Practice Problems, January 12, 2018

1. Give values to variables a and b on the command line. Write statements to find $a+b$, $a-b$, a/b , a^2 and square root of $(a+b)$.
2. Then use *whos*, *who*, *clc*, and *clear* commands to see the output.
3. Find the factors of 128 and 360. What is the greatest common denominator and least common multiplier of these numbers. Does the command work for negative numbers?
4. Given $A=75^\circ$, $B=2.31$ and $C=-5.27$, calculate the following:
 $\sin(A)$, $\cos(A)$, $\tan(A)$, $\tan^{-1}(B)$, e^B , $\ln(B)$, $\ln(C)$, $e^B/(\tan(A)+\log_{10}(B))^2$. Any errors?
5. Use MATLAB to check whether $\sin(A+B) = \sin A \cos B + \cos A \sin B$ and $\sec^2 A = 1 + \tan^2 A$ by using different values for A and B.
6. If $\sin(x) = \pm 0.345$, $\cot(x) = -2.1$ and $\cos^3(x) = 0.749$ find the values of x in degrees.
7. Consider complex numbers $D = 2+3i$ and $E = 5-6i$. Calculate $D+E$, $D-E$, $D \cdot E$ and D/E . Could you identify the principle behind these operations? What are the absolute values and arguments of $(D+E)$ and D/E .
8. Now type *whos* and *who* to see the output. Type *clc* and *clear* to see the output.
9. Try to use help to find out how to plot $y = \sin x + 2\cos x + e^x$ over $-1 \leq x \leq 1$
10. Write a simple code on the command window to convert temperature from Celsius to Fahrenheit. Use your program to convert 30°C and 75°C to $^\circ\text{F}$ values.