

Quiz # 2

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Q1: Plot the function  $z(x) = \sqrt{x}(1+x)^{1/3}$  between  $x = 0$  and  $x = 10$ . Label your axes.

Write down the commands and draw the plot on the given graph below.

$x = 0:1:10;$

$z = x.^{(1/2)} .* ((1+x).^{(1/3)});$

plot(x,z), x label('x'), y label('x^(1/2) \* (1+x)^(1/3)')

title('Simple plot')



Q2: Solve the following system of linear equations. Write your full code (step-by-step) and the solution.

$x + 5z - 2y + w = 1$

$w + y - 4z + 1 = 0$

$3x - 2w = 10$

$2z - 5y - 5 = x$

>>

$x + 5z - 2y + w = 1$

$0x - 4z + y + w = -1$

$3x + 0z + 0y - 2w = 10$

$0x + 2z - 5y + 0w = 0$

$A = [1, 5, -2, 1; 0, -4, 1, 1; 3, 0, 0, -2; 0, 2, -5, 0]$

$B = [1; -1; 10; 0]$

$x = A \setminus B$

If  $b = 0.5$  and  $c = 1.33$ , write a MATLAB command using the correct format to print the output of  $b/c$  as "50/133"

>>  $b = 0.5;$

>>  $c = 1.33;$

>> Format Rat (b/c) ✓

Write your MATLAB code to calculate , then write down the answer.

$$\frac{\sqrt[4]{10}}{e^3 - \ln(5)}$$

>>  $10^{(1/4)} / (\exp(3) - \log(5))$  ✓

>> ans =

>> 0.0969 ✓

3: (a) Write your MATLAB command to produce matrix  $B$  as follows:  $B = \begin{bmatrix} 1 & 2 & 3 \\ \log(2) & 5 & \cos^{-1}(0.5) \end{bmatrix}$

>>  $B = \begin{bmatrix} 1 & 2 & 3 \\ 8 & 5 & 2 \\ 0.6931 & 60 & 60 \end{bmatrix}$   ~~$B = [1 \ 2 \ 3; 8 \ 5 \ 2; \log_{10}(2) \ \sin(\pi) \ \arccos(0.5)]$~~

~~$B = [1 \ 2 \ 3]$~~

$B = [1 \ 2 \ 3; 8 \ 5 \ 2; \log(2) \ \sin(\pi) \ \cos^{-1}(0.5)]$  ✓

(b) Write your MATLAB command to create submatrix  $A$  from matrix  $B$  as follows:  $A = \begin{bmatrix} 8 & 2 \\ 0.3010 & 60 \end{bmatrix}$

>>  $A = (B(2:3), [2 \ 3])$  ✓

$A = B([2 \ 3], 1:3)$

$$\sin 30 = \frac{1}{2}$$

$$\cos 30 = \frac{\sqrt{3}}{2}$$

$$\cos(-1) (\cos 5) = 80$$