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ECE 498 - Matlab

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```
clear;
clc;
close all;
```

Question 1: Finding Roots

```
% Create an inline function to find the roots of.
y = inline('0.05 * x - sin(x)');

% Use fzero() to find the roots. Go from -5 to 5.
for i=-5:5
    % Dont print roots that will show up twice.
    if(fzero(y,i) ~= fzero(y,i-1))
        fprintf("Zero found at x=%d\n", fzero(y,i));
    end
end
```

```
Zero found at x=-2.991456e+00
Zero found at x=-1.046446e-24
Zero found at x=0
Zero found at x=1.046446e-24
Zero found at x=2.991456e+00
```

Question 2: Finding Roots Again

```
% Y = x7 + 2x6 - 7x5 - 8x4 + 10x3 + 0x2 + 8x + 0
polyCoefs = [1 2 -7 -8 10 0 8 0];
x = roots(polyCoefs)
```

```
x =

   0.0000 + 0.0000i
  -3.0529 + 0.0000i
  -2.0000 + 0.0000i
   2.0000 + 0.0000i
   1.2835 + 0.0000i
  -0.1153 + 0.7051i
  -0.1153 - 0.7051i
```

Question 3: Solve non-linear equation

```
% Use matlab function to solve the system of equations
x0 = [0,0,0]';
x = fsolve('nle', x0)
```

```
Equation solved.

fsolve completed because the vector of function values is near zero
as measured by the value of the function tolerance, and
the problem appears regular as measured by the gradient.


x =

    2.0000
    2.0000
    2.0000
```

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