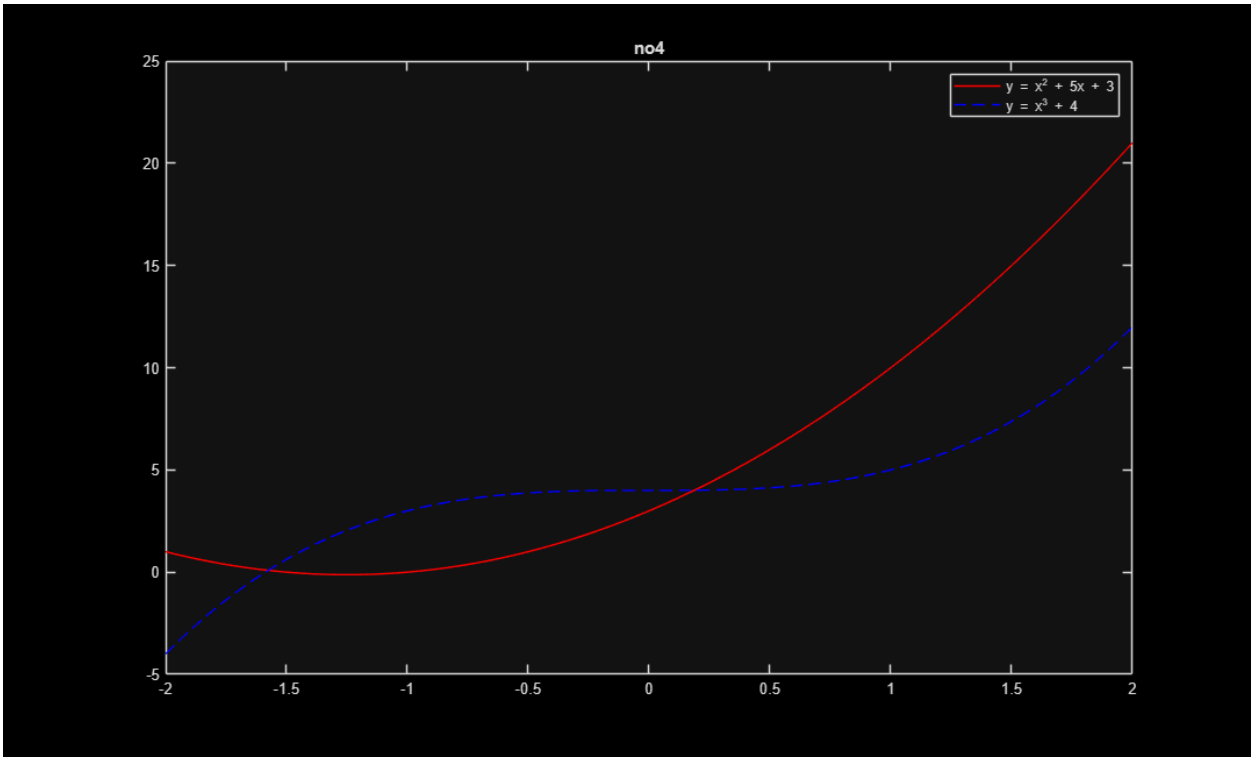
```
% CPE 3103 - FUNDAMENTALS OF MIXED SIGNALS AND SENSORS
% Group 1   MW 10:30 AM - 1:30 PM LBCEAC2 TC
% Sarcol, Joshua S      BS-CpE 3        2025/09/03
% Laboratory Exercise 1.a

clc
clear

% 1a
A = [2 1 1;
     0 -3 4];

B = [3 -1 3;
     2 0 5];
no1a = A - B

% 1b
A = [1 2;
     3 0];

B = [1 3;
    0 -4];
no1b = 3.*A - 2.*B

% 1c
A = [2 1 1;
     0 -3 4];

B = [3 -1 3;
     2 0 5];
no1c = 5.*A - 2.*B

% 2
A = [1 2;
     3 0];

B = [2 -1;
     3 4];

C = [1 3;
     4 -1];
no2 = C.*(A + B)

% 3
no3 = C.*A + C.*B

% 4
x = -2:0.01:2;
a = polyval([2 5 3], x);
b = polyval([1 0 0 4], x);

figure(1)
```

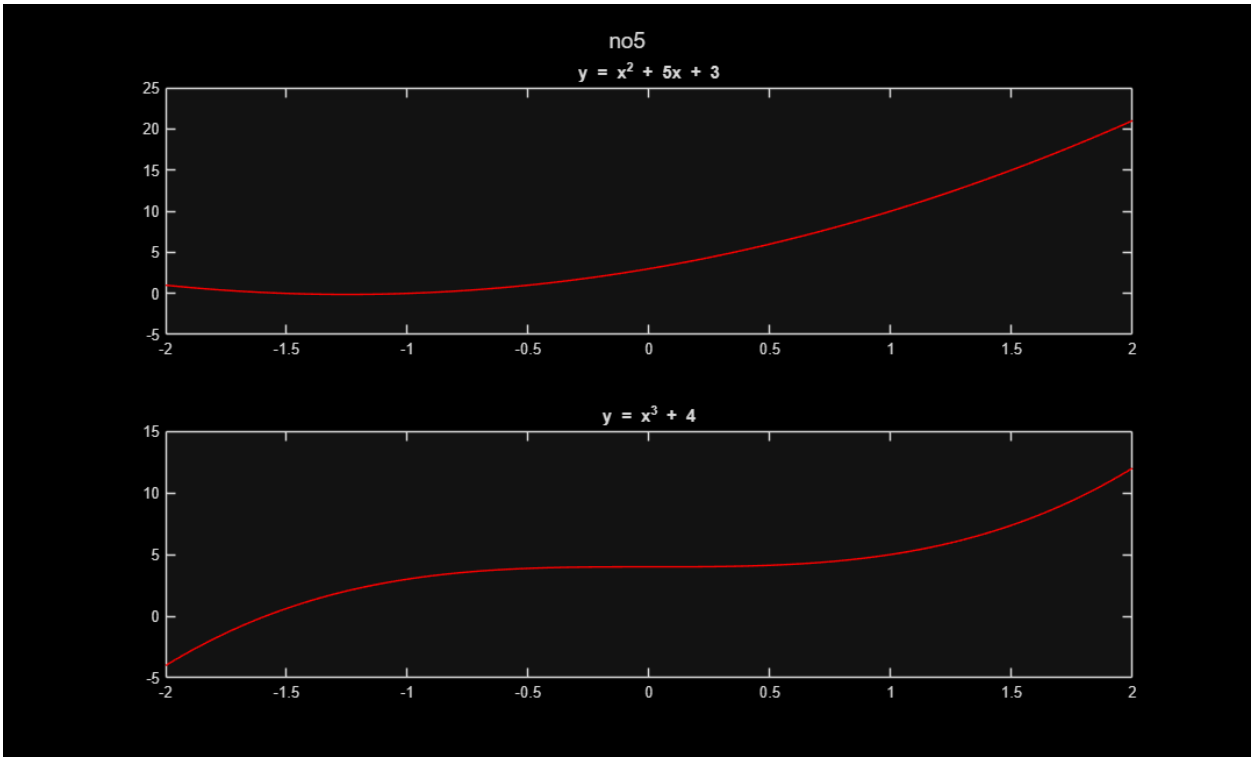
```
plot(x, a, "r")
hold on
plot(x, b, "b--")
legend(["y = x^2 + 5x + 3" "y = x^3 + 4"])
title("no4")
hold off

% 5
figure(2)
subplot(2, 1, 1)
plot(x, a, "r")
title("y = x^2 + 5x + 3")

subplot(2, 1, 2)
plot(x, b, "r")
title("y = x^3 + 4")

sgtitle("no5")

% 6a
p1 = [1 32 8 85 4 1 3 1];
no6a = roots(p1)

% 6b
p2 = [3 -1 24 9 6 2];
no6b = roots(p2)

% 6c
p3 = [1 77 11 1];
no6c = roots(p3)

% 7a
no7a = conv(p1, p2)

% 7b
no7b = conv(p1, p3)

% 7c
no7c = conv(p2, p3)
```

```
no1a =

    -1     2    -2
    -2    -3    -1


no1b =

     1     0
     9     8


no1c =
```

```
     4     7    -1
    -4   -15    10


no2 =

     3     3
    24    -4


no3 =

     3     3
    24    -4


no6a =

 -31.8324 + 0.0000i
  -0.0669 + 1.6287i
  -0.0669 - 1.6287i
   0.2275 + 0.3069i
   0.2275 - 0.3069i
  -0.2444 + 0.1458i
  -0.2444 - 0.1458i


no6b =

   0.3600 + 2.8093i
   0.3600 - 2.8093i
  -0.0216 + 0.4914i
  -0.0216 - 0.4914i
  -0.3435 + 0.0000i


no6c =

 -76.8570 + 0.0000i
  -0.0715 + 0.0889i
  -0.0715 - 0.0889i


no7a =

  Columns 1 through 6

           3          95          16        1024         413        2305

  Columns 7 through 12

         981         586         274          65          29          12
```

```
  Column 13

           2

no7b =

  Columns 1 through 6

           1         109        2483        1054        6669        1252

  Columns 7 through 11

         209         247         111          14           1

no7c =

  Columns 1 through 6

           3         230         -20        1849         962         587

  Columns 7 through 9

         229          28           2
```





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