CMPE 323

Lab 00: Getting Started with MATLAB

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1. Outputs generated in 3.1.1

```
3.1.1

growth =

   1.0e+03 *

    0.0010    0.0020    0.0040    0.0080    0.0160    0.0320    0.0640    0.1280    0.2559    0.5118    1.0235
```

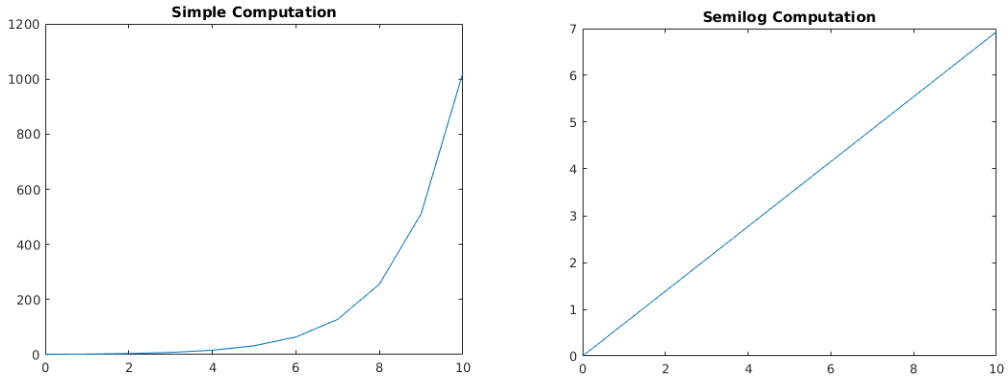
2. Outputs generated in 3.1.2

```
3.1.2

natural_response =

  Columns 1 through 15

    2.0000    1.8879    1.7661    1.6354    1.4963    1.3496    1.1960    1.0363    0.8713    0.7019    0.5289    0.3532    0.1757   -0.0027   -0.1811

  Columns 16 through 30

   -0.3586   -0.5342   -0.7071   -0.8764   -1.0412   -1.2007   -1.3541   -1.5006   -1.6395   -1.7700   -1.8914   -2.0033   -2.1049   -2.1958   -2.2755

  Columns 31 through 45

   -2.3435   -2.3997   -2.4436   -2.4750   -2.4939   -2.5000   -2.4934   -2.4740   -2.4421   -2.3977   -2.3411   -2.2725   -2.1924   -2.1011   -1.9990

  Columns 46 through 60

   -1.8868   -1.7650   -1.6342   -1.4950   -1.3482   -1.1946   -1.0348   -0.8698   -0.7003   -0.5273   -0.3516   -0.1741    0.0043    0.1827    0.3601

  Columns 61 through 75

    0.5357    0.7086    0.8779    1.0427    1.2021    1.3555    1.5019    1.6407    1.7711    1.8925    2.0042    2.1057    2.1965    2.2761    2.3441

  Columns 76 through 90

    2.4001    2.4439    2.4753    2.4940    2.5000    2.4933    2.4738    2.4418    2.3972    2.3405    2.2719    2.1916    2.1002    1.9981    1.8858

  Columns 91 through 101

    1.7639    1.6330    1.4937    1.3469    1.1932    1.0334    0.8683    0.6988    0.5257    0.3500    0.1725
```

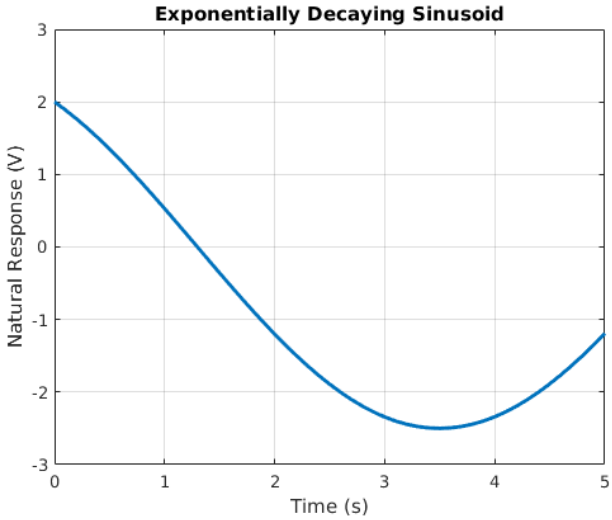
3. Outputs generate in 3.1.3

```
3.1.3

complex_exp_1 =

  Columns 1 through 7

   1.0000 + 0.0000i   0.9975 + 0.0709i   0.9899 + 0.1415i   0.9774 + 0.2114i   0.9599 + 0.2802i   0.9376 + 0.3476i   0.9106 + 0.4132i

  Columns 8 through 14

   0.8790 + 0.4768i   0.8430 + 0.5379i   0.8027 + 0.5964i   0.7584 + 0.6518i   0.7102 + 0.7040i   0.6585 + 0.7526i   0.6034 + 0.7974i

  Columns 15 through 21

   0.5453 + 0.8382i   0.4845 + 0.8748i   0.4212 + 0.9070i   0.3558 + 0.9346i   0.2886 + 0.9574i   0.2200 + 0.9755i   0.1502 + 0.9887i

  Columns 22 through 28

   0.0797 + 0.9968i   0.0088 + 1.0000i  -0.0622 + 0.9981i  -0.1328 + 0.9911i  -0.2028 + 0.9792i  -0.2717 + 0.9624i  -0.3393 + 0.9407i

  Columns 29 through 35

  -0.4052 + 0.9142i  -0.4690 + 0.8832i  -0.5305 + 0.8477i  -0.5893 + 0.8079i  -0.6451 + 0.7641i  -0.6977 + 0.7164i  -0.7468 + 0.6651i

  Columns 36 through 42

  -0.7921 + 0.6104i  -0.8334 + 0.5527i  -0.8705 + 0.4922i  -0.9032 + 0.4292i  -0.9314 + 0.3640i  -0.9549 + 0.2970i  -0.9735 + 0.2286i

  Columns 43 through 49

  -0.9873 + 0.1589i  -0.9961 + 0.0885i  -0.9998 + 0.0176i  -0.9986 - 0.0534i  -0.9923 - 0.1241i  -0.9810 - 0.1942i  -0.9647 - 0.2633i

  Columns 50 through 51

  -0.9436 - 0.3310i  -0.9178 - 0.3971i

complex_exp_2 =

  Columns 1 through 7

   1.0000 + 0.0000i   0.9975 - 0.0709i   0.9899 - 0.1415i   0.9774 - 0.2114i   0.9599 - 0.2802i   0.9376 - 0.3476i   0.9106 - 0.4132i

  Columns 8 through 14

   0.8790 - 0.4768i   0.8430 - 0.5379i   0.8027 - 0.5964i   0.7584 - 0.6518i   0.7102 - 0.7040i   0.6585 - 0.7526i   0.6034 - 0.7974i

  Columns 15 through 21

   0.5453 - 0.8382i   0.4845 - 0.8748i   0.4212 - 0.9070i   0.3558 - 0.9346i   0.2886 - 0.9574i   0.2200 - 0.9755i   0.1502 - 0.9887i

  Columns 22 through 28

   0.0797 - 0.9968i   0.0088 - 1.0000i  -0.0622 - 0.9981i  -0.1328 - 0.9911i  -0.2028 - 0.9792i  -0.2717 - 0.9624i  -0.3393 - 0.9407i

  Columns 29 through 35

  -0.4052 - 0.9142i  -0.4690 - 0.8832i  -0.5305 - 0.8477i  -0.5893 - 0.8079i  -0.6451 - 0.7641i  -0.6977 - 0.7164i  -0.7468 - 0.6651i

  Columns 36 through 42

  -0.7921 - 0.6104i  -0.8334 - 0.5527i  -0.8705 - 0.4922i  -0.9032 - 0.4292i  -0.9314 - 0.3640i  -0.9549 - 0.2970i  -0.9735 - 0.2286i

  Columns 43 through 49

  -0.9873 - 0.1589i  -0.9961 - 0.0885i  -0.9998 - 0.0176i  -0.9986 + 0.0534i  -0.9923 + 0.1241i  -0.9810 + 0.1942i  -0.9647 + 0.2633i

  Columns 50 through 51

  -0.9436 + 0.3310i  -0.9178 + 0.3971i
```

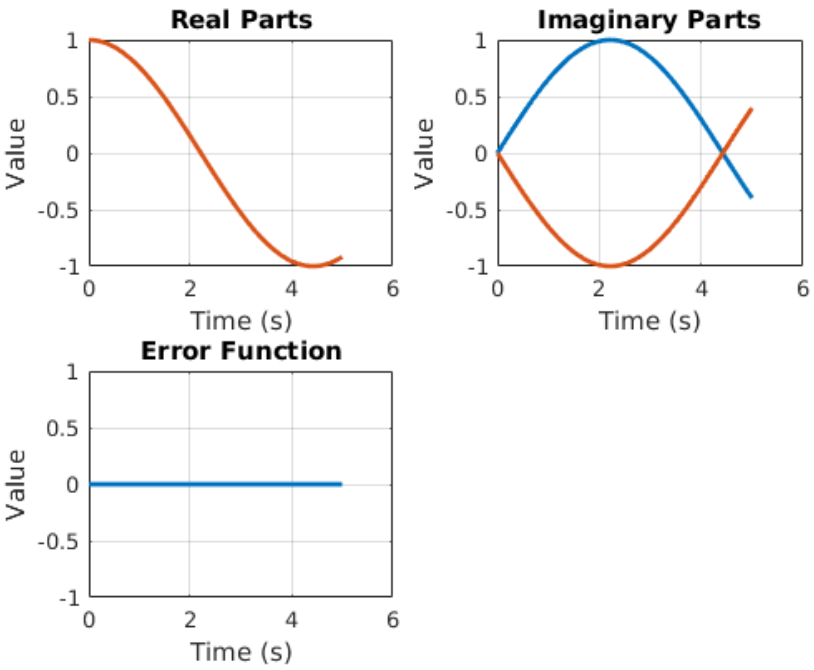
4. Plots generated in 3.2.1 through 3.2.3



Function in 3.1.1 plotted with a regular and semilog scale

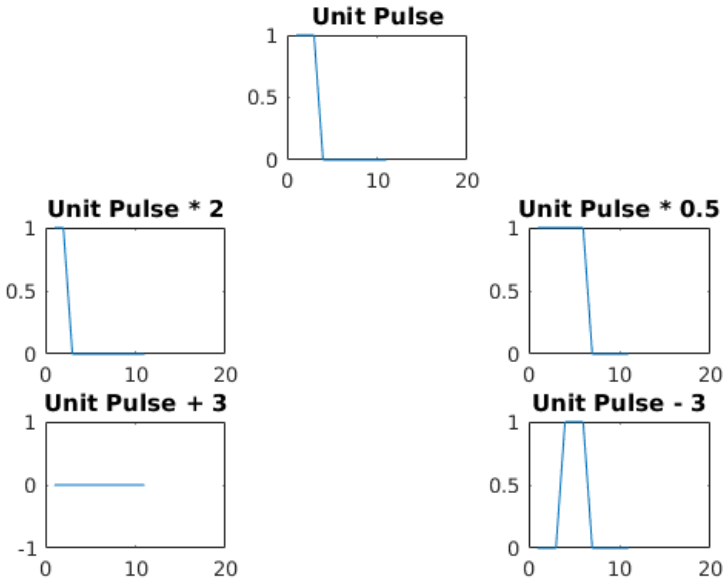


Function in 3.1.2 plotted with additional features



Function in 3.1.3 plotted alongside in subplots

5. Plots generated in 3.3.1



Pulse anonymous function generating subplots with different arguments

6. Anonymous functions replicating previous functions

```
% Explonential Growth Anonymous Function
growth = @(n, r, t) (n * exp(r.*t));

n = 1;
r = 0.6931;
t = 0:1:10;
growth(n, r, t)


% Exponential Decaying Anonymous Function
natural_response = @(omegaD, t) (2 * cos(omegaD .* t) - 1.5 *
sin(omegaD .* t));

alpha = 0.7;
omega = 1.0;
omegaD = sqrt(omega^2 - alpha^2);
t = 0:0.1:10;
natural_response(omegaD, t)
```