Table of Contents

Question 2

```
clear;clc;
close all;
format long

load rotmateuler123_data01

R01 = rotmateuler123(psi,theta,phi);

disp('Checking Result for Euler angles data set 01')
disp('Error is:')
disp(norm(R01-R_true));

clear
load rotmateuler123_data02

R_true = rotmateuler123(psi,theta,phi);
disp('R_true from Euler angles for data set 02 is:')
disp(R_true);
```

```
Checking Result for Euler angles data set 01
Error is:
     0

R_true from Euler angles for data set 02 is:
   0.053726755769759  -0.968751794569192  -0.242143338197493
   0.296835946406159  -0.216037226294276   0.930170058524911
  -0.953415888600361  -0.121851866518510   0.275953376479323
```

Question 3

```
clear;

load rotmatquaternion_data05

R01 = rotmatquaternion(q);

disp('Checking Result for quaternion data set 01')
disp('Error is:')
disp(norm(R01-R_true));

clear
```

```
load rotmatquaternion_data06

R_true = rotmatquaternion(q);
disp('R_true from quaternion for data set 02 is:')
disp(R_true);
format short
```

```
Checking Result for quaternion data set 01
Error is:
     0

R_true from quaternion for data set 02 is:
  -0.337238027363993   0.634586043613785  -0.695392742376742
  -0.874691034865763   0.061932657860731   0.480707748445733
   0.348117949013122   0.770366730292079   0.534180675833550
```

Question 4

$$R_a = R_1(\frac{\pi}{2})$$

$$R_b = R_2(\frac{\pi}{2})$$

$$R_a R_b = R_1(\frac{\pi}{2})R_2(\frac{\pi}{2})$$

$$R_b R_a = R_2(\frac{\pi}{2})R_1(\frac{\pi}{2})$$

```
Ra = rotmateuler123(pi/2,0,0);
disp('Ra is:')
disp(Ra)

Rb = rotmateuler123(0,pi/2,0);
disp('Rb is:')
disp(Rb)

RaRb = Ra*Rb;
RbRa = Rb*Ra;

disp('Ra*Rb is:')
disp(RaRb)
disp('Rb*Ra is:')
disp(RbRa)

disp('These examples of Ra and Rb show that Ra*Rb is not always equal
 to Rb*Ra')
```

```
Ra is:
    0.0000    1.0000         0
   -1.0000    0.0000         0
         0         0    1.0000
```

```
Rb is:
    0.0000         0   -1.0000
         0    1.0000         0
    1.0000         0    0.0000

Ra*Rb is:
    0.0000    1.0000   -0.0000
   -0.0000    0.0000    1.0000
    1.0000         0    0.0000

Rb*Ra is:
    0.0000    0.0000   -1.0000
   -1.0000    0.0000         0
    0.0000    1.0000    0.0000

These examples of Ra and Rb show that Ra*Rb is not always equal to
 Rb*Ra
```

Published with MATLAB® R2017a