Problem 4

```
addpath(genpath(fileparts(which('pathfile.m'))))
interr = 'latex';
% interr = 'none';
set(groot,'defaulttextinterpreter',interr);
set(groot, 'defaultAxesTickLabelInterpreter',interr);
set(groot, 'defaultLegendInterpreter',interr);
R_E = 6378.1363;
mu = 398600.4415;
```

Part a)

```
r1 = 3*R_E
```

```
r1 = 1.9134e+04
```

```
r2 = 4*R_E
```

```
r2 = 2.5513e+04
```

```
c = sqrt(r1^2 + r2^2)
```

```
c = 3.1891e+04
```

Part b)

```
S = (r1+r2+c)/2
```

```
S = 3.8269e+04
```

```
am = S/2
```

```
am = 1.9134e+04
```

```
P1Fm = (2*am-r1)
```

```
P1Fm = 1.9134e+04
```

```
P2Fm = (2*am-r2)
```

```
P2Fm = 1.2756e+04
```

```
alpha = sin(r2/c)
```

```
alpha = 0.7174
```

```
beta = pi-pi/2-alpha
```

```
beta = 0.8534
```

```
r1vec = [0; r1], r2vec = [r2;0]
```

```
r1vec = 2×1
10^4 ×
         0
```

```
    1.9134
r2vec = 2×1
10^4 ×
    2.5513
         0
```

```
c12vec = [r2; -r1]
```

```
c12vec = 2×1
10^4 ×
    2.5513
   -1.9134
```

```
Fmloc = r1vec + P1Fm*c12vec/c
```

```
Fmloc = 2×1
10^4 ×
    1.5308
    0.7654
```

Part d)

```
Fmloc_mag = norm(Fmloc)
```

```
Fmloc_mag = 1.7114e+04
```

```
em = Fmloc_mag/2/am
```

```
em = 0.4472
```