Chapter 2-HW

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ENGI-111-01

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Problem 10

```
A = [1,4,2;2,4,100;7,9,7;3,pi,42];B = log(A);
% a.
B(2,:)
% b.
sum(B(2,:))
% c.
B(:, 2).*A(:, 1)
% d.
max(B(:, 2).*A(:, 1))
% e.
sum(A(1,:)./transpose(B(1:3, 3)))
```

```
ans =

    0.6931    1.3863    4.6052


ans =

    6.6846


ans =

    1.3863
    2.7726
   15.3806
    3.4342
```

```
ans =

   15.3806


ans =

    3.3391
```

Problem 11

a.

```
A = [3,-2,1;6,8,-5;7,9,10]
B = [6,9,-4;7,5,3;-8,2,1]
C = [-7,-5,2;10,6,1;3,-9,8]
D = cat(3,A,B,C)
% b.
max(max(D(:,:,1)))
max(max(D(:,:,2)))
max(max(D(:,:,3)))
max(D(:))


A =

     3    -2     1
     6     8    -5
     7     9    10


B =

     6     9    -4
     7     5     3
    -8     2     1


C =

    -7    -5     2
    10     6     1
     3    -9     8


D(:,:,1) =

     3    -2     1
     6     8    -5
     7     9    10


D(:,:,2) =
```

```
     6     9    -4
     7     5     3
    -8     2     1


D(:,:,3) =

    -7    -5     2
    10     6     1
     3    -9     8


ans =

    10


ans =

     9


ans =

    10


ans =

    10
```

Problem 18

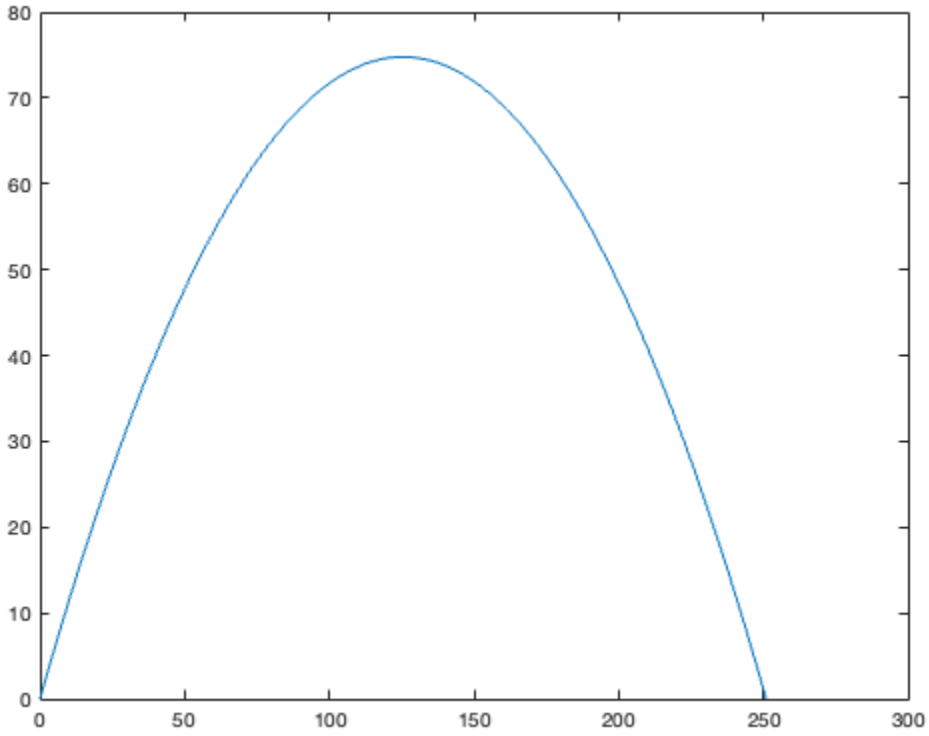
```
v0 = 50;A = deg2rad(50);g = 9.81;
% a.
t_hit = (2*v0*sin(A))/g
y_max = (v0^2*sin(A)^2)/(2*g)
% b.
t = linspace(0,t_hit,1000);
x = v0*cos(A)*t;y = v0*sin(A)*t-(1/2)*g*t.^2;
plot(x,y)


t_hit =

    7.8088


y_max =
```

```
74.7737
```



Problem 41

```
A = [6,-3,4;12,5,-7;-5,2,6]
B = [41;-26;16]
x = A\B
```

```
A =

     6    -3     4
    12     5    -7
    -5     2     6


B =

    41
   -26
    16


x =
```

```
    2.0035
   -2.6848
    5.2312
```

Problem 58

```
a = 6.49;b = 0.0562;R = 0.08206;T = 300;P = 0.95;
V_ideal = R*T/P
V_Waals = roots([P,-(P*b + R*T),a,-a*b])
```

```
V_ideal =

   25.9137


V_Waals =

   25.7047
    0.1840
    0.0812
```

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