Aaron Klapheck 60

```
% Qizz 5
clear, clc
Date = date
```

```
Date =

05-Dec-2007
```

Problem 1.

```
% Given:
% V = 10^9 + 10^8*(1-exp(-t/100)) - 10^7*t
% V is water volume in liters
% t is the time in days

% Find: t when V = 2.5*10^8
% Note: Number_of_days will give then number of days it takes for the water
% volume to go BELOW 2.5*10^8. Therefore the actuale number of days it will
% take will be between (Number_of_days - 1) and (Number_of_days).


t = 0;
V = 10^9 + 10^8*(1-exp(-t/100)) - 10^7*t;

while V > 2.5*10^8
    V = 10^9 + 10^8*(1-exp(-t/100)) - 10^7*t;
    t = t + 1;
end %V > 2.5*10^8

Number_of_days = t                    OK
```

```
Number_of_days =

    82
```

Problem 2

```
% Graph plot in general to estimate where intersection occurs.
t = [0:0.05:100];
V = 10^9 + 10^8*(1-exp(-t/100)) - 10^7*t;
VLine = 10^8;
plot(t, V, t, VLine), xlabel('Time (days)'), grid, ...
    ylabel('Water Volume (liters)'), ...
    title('Volume of Water vs. Time')
% General range: t between 90 and 100, V between 5*10^8 and 1.5*10^8.


% Graph plot near where the intersection takes place to get better
% approximation.
t = [0:0.05:100];
V = 10^9 + 10^8*(1-exp(-t/100)) - 10^7*t;
VLine = 10^8;
plot(t, V, t, VLine, 'r--'), xlabel('Time (days)'), grid, ...
    ylabel('Water Volume (liters)'), ...
```

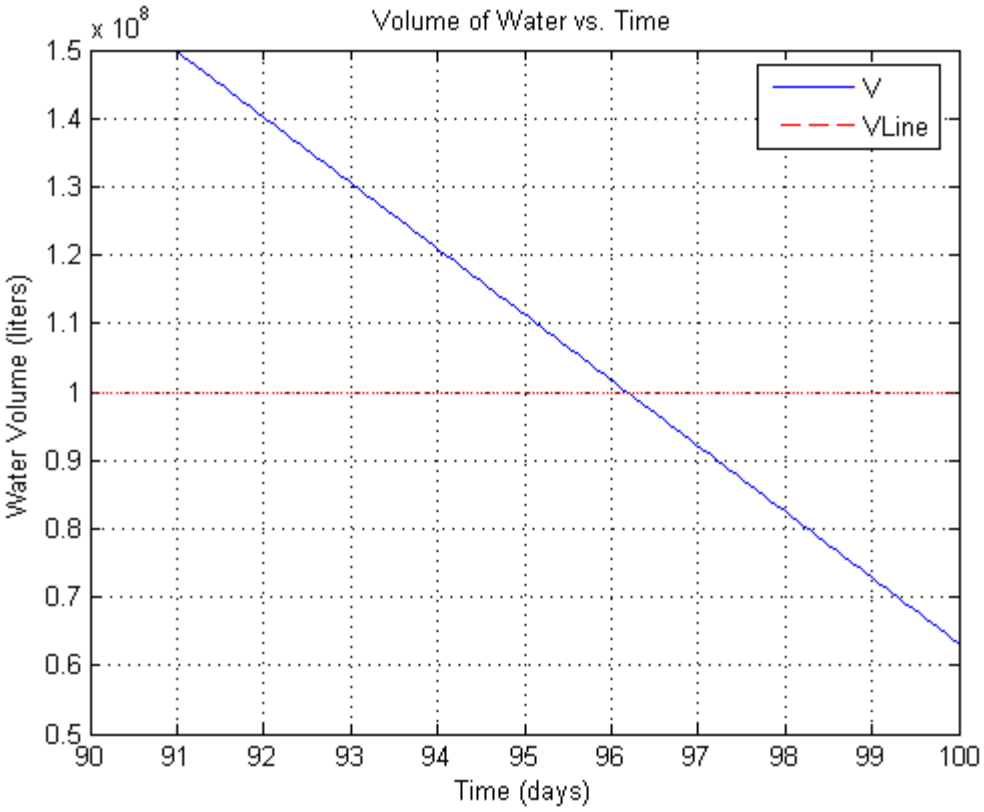
```
title('Volume of Water vs. Time'), legend('V', 'VLine'), ...
axis([90 100 .5*10^8 1.5*10^8]), [days, liters] = ginput(1)
```
OK

```
days =

   96.2097

liters =

  9.9854e+007
```



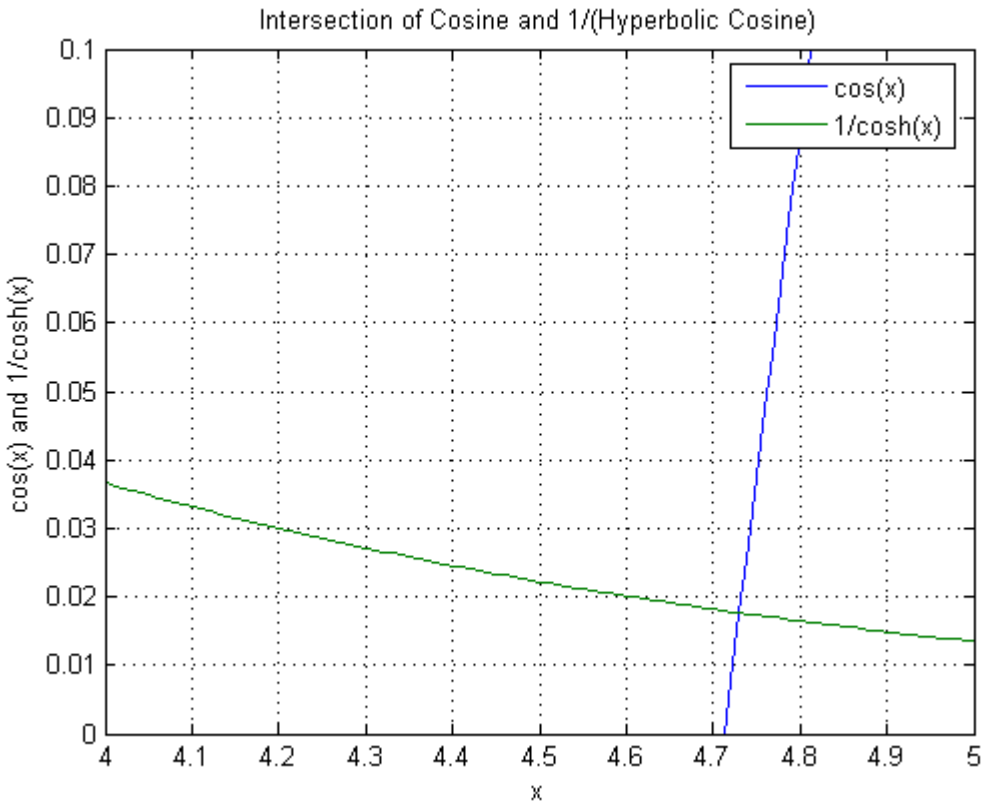
Problem 3.

```
% Graph plot in general to estimate where intersection occurs.
x = [0:0.01:6];
y_1 = cos(x);
y_2 = 1./cosh(x);
plot(x, y_1, x, y_2), xlabel('x'), ylabel('cos(x) and 1/cosh(x)'), ...
    title('Intersection of Cosine and 1/(Hyperbolic Cosine)'), ...
    legend('cos(x)', '1/cosh(x)'), grid
% General range: x between 4 and 5, y between 0 and 0.1.


% Graph plot near where the intersection takes place to get better
% approximation.
x = [0:0.01:6];
y_1 = cos(x);
y_2 = 1./cosh(x);
plot(x, y_1, x, y_2), xlabel('x'), ylabel('cos(x) and 1/cosh(x)'), ...
    title('Intersection of Cosine and 1/(Hyperbolic Cosine)'), ...
    legend('cos(x)', '1/cosh(x)'), axis([4 5 0 0.1]), ...
    grid, [intersect_x, intersect_y] = ginput(1)
```
OK

```
intersect_x =
    4.7316

intersect_y =
    0.0174
```



Problem 4.

```
% Given
x = [0:1:5]
y_1 = [11, 13, 8, 7, 5, 9]
y_2 = [2, 4, 5, 5, 3, 4]

plot(x, y_1, '*-', x, y_2, 'o--'), xlabel('x'), ylabel('y'), ...
    title('Plotting y_1(x) and y_2(x)'), legend('y_1', 'y_2')
```

OK

```
x =
     0     1     2     3     4     5

y_1 =
    11    13     8     7     5     9

y_2 =
```

2 4 5 5 3 4