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```
% Andrew Gerst
```

Problem #1: Gas Tank Volume

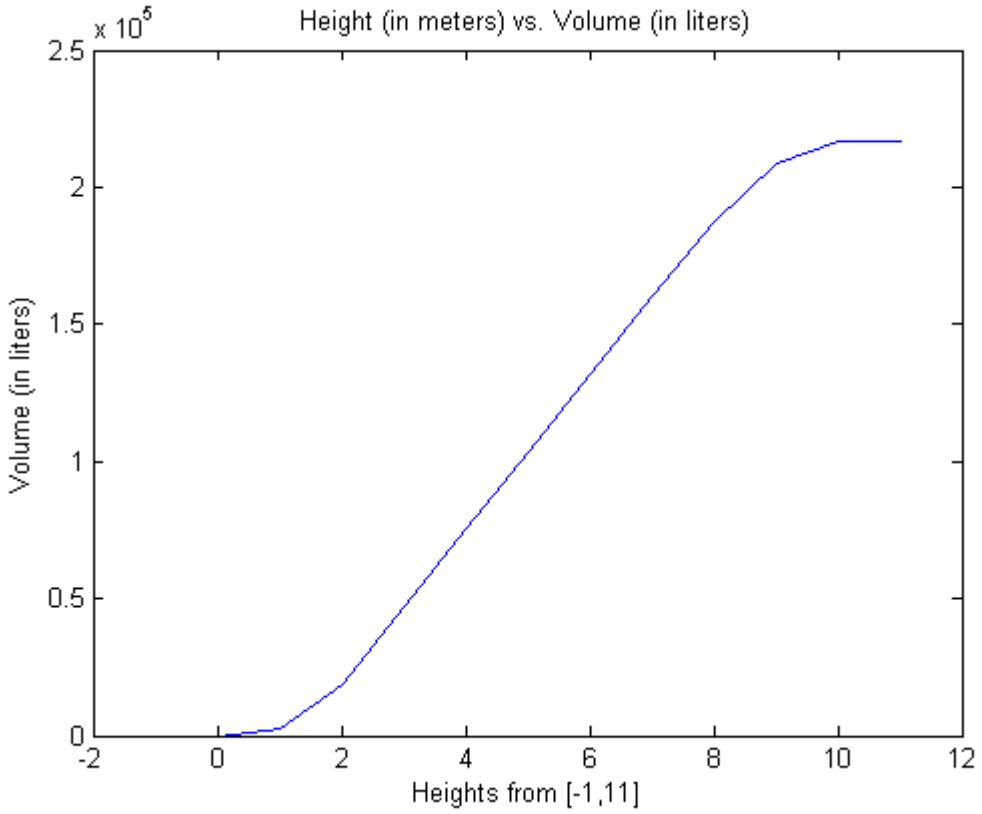
Function Descriptions

```
% GasTankVolume Function
% This function computes the volume of the gas tank in liters by ca
% each of the individual functions based on how full the tank is an
% whether or not parts of the different components (shapes) are fil
% by how much.

% HemiSphereVolume Function
% This function computes the volume of the top portion of the gas t
% which contains the formula for the volume of a partially filled
% hemisphere.

% CylinderVolume Function
% This function computes the volume of the middle portion of the ga
% which contains the formula for the volume of a cylinder depending
% radius and height.

% ConeVolume Function
% This function computes the volume of the bottom portion of the ga
% which contains the formula for the volume of a partially filled i
% cone.
```

Part 1B: Plotting Volumes from Current Height

```
heights = -1:11;
volumes = zeros(1,length(heights));
```

```
for idx = 1:length(volumes)
    volumes(idx) = GasTankVolume(heights(idx));
end
plot(heights,volumes);
title('Height (in meters) vs. Volume (in liters)' );
xlabel('Heights from [-1,11]' );
ylabel('Volume (in liters)' );
```



Problem #2: Parking Rates at SLC Airport

Function Descriptions

```
% LongTerm Function
% This function determines the rate of long-term parking based on t
% amount of days and hours.

% ShortTerm Function
% This function determines the rate of short-term parking based on
% amount of days, hours, and minutes.

% ValidateTime Function
```

```
% This function takes values for days, hours, and minutes, and tran
% them into more appropriate values, or outputs an error message.
```

Part 2A: Long Term Parking

3 Test Cases (Long Term Parking)

```
% Test case 1: a stay of 27 days, 3 hours should result in an expec
% of $192
testRate1 = LongTerm( 27, 3 );
expectedRate1 = 192;
if (testRate1 ~= expectedRate1)
    error('Error: computed rate didn''t match expected rate' );
end

% Test case 2: a stay of 27 days, 3 hours should result in an expec
% of $192
testRate2 = LongTerm( 27, 3 );
expectedRate2 = 192;
if (testRate2 ~= expectedRate2)
    error('Error: computed rate didn''t match expected rate' );
end

% Test case 3: a stay of 27 days, 3 hours should result in an expec
% of $192
testRate3 = LongTerm( 27, 3 );
expectedRate3 = 192;
if (testRate3 ~= expectedRate3)
    error('Error: computed rate didn''t match expected rate' );
end
```

```
Error using ==> Assignment4 at 72
Error: computed rate didn't match expected rate
```

Part 2B: Short Term Parking

3 Test Cases (Short Term Parking)

```
% Test case 1: a stay of 27 days, 3 hours, 20 minutes should result
% expected rate of $192
testRate1 = LongTerm( 27, 3, 20 );
expectedRate1 = 192;
if (testRate1 ~= expectedRate1)
    error('Error: computed rate didn''t match expected rate' );
end

% Test case 2: a stay of 27 days, 3 hours, 20 minutes should result
```

```
% expected rate of $192
testRate2 = LongTerm( 27, 3, 20 );
expectedRate2 = 192;
if (testRate2 ~= expectedRate2)
    error('Error: computed rate didn''t match expected rate' );
end

% Test case 3: a stay of 27 days, 3 hours, 20 minutes should result
% expected rate of $192
testRate3 = LongTerm( 27, 3, 20 );
expectedRate3 = 192;
if (testRate3 ~= expectedRate3)
    error('Error: computed rate didn''t match expected rate' );
end
```

Part 2C: Robustness & User Input

Part 2D: Plotting Parking Rates

```
% Assume time is a 3 x 1536 matrix: [days; hours; minutes]
rates = zeros( 2, length( time ) );
for idx = 1:length( time )
    days = time( 1, idx );
    hours = time( 2, idx );
    minutes = time( 3, idx );
    rates( 1, idx ) = ShortTerm( days, hours, minutes );
    rates( 2, idx ) = LongTerm( days, hours + minutes/60);
end
% Plot Rates
```

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