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```
% Ch 3. Assignment #6       due 10/17
% Created on October 1, 2007.
% Program Ch3 HW asignment 6.m: Homework assignments taken from the
% book Introduction to Matlab 7 for Engineers by William J. Palm 3.
```

Problem 2

```
% Angle measurements are given in radians, with positive numbers
% indicating a c.c.w. rotation from the x-axis and negative numbers
% indication a c.w. rotation form the y-axis.
% Given:
x = -5 - 8i, y = 10 - 5i

% Part a.
Mag_xy = abs(x*y)
Angle_xy = angle(x*y)

% Part b.
Mag_xy = abs(x/y)
Angle_xy = angle(x/y)
```

```
x =

  -5.0000 - 8.0000i


y =

  10.0000 - 5.0000i


Mag_xy =

  105.4751


Angle_xy =

   -2.5930


Mag_xy =

    0.8438


Angle_xy =

   -1.6657
```

Problem 3

```
% Finding angles.
Angle_a = atan2(8,5)            % a.
```

```
Angle_b = atan2(8,-5)          % b.
Angle_c = atan2(-8,5)          % c.
Angle_d = atan2(-8,-5)         % d.
```

```
Angle_a =

    1.0122

Angle_b =

    2.1294

Angle_c =

   -1.0122

Angle_d =

   -2.1294
```

Problem 7

Comment for Holl: For problems 7, 9, and 12 I used my, in your words, "harder method" which you said was OK. Because the method I used for problems 7, 9, and 12 uses inputs that cannot be evaluated in word I copied the command window for you to see the answers. Please see the **command window** section to view the code copied from the command window for problems 7, 9, and 12 (the script file for these three problems are located on the last three pages). For problems 10 and 12 I used the "easier method," i.e. functions, described in chapter 3. These two functions are located on page 6.

Problem 9

Problem 10

```
% The function time_of_fall gives you the time it takes
% for an object to reach a certian height when thrown vertically, given
% the height(h) it reaches, the initial velocity(v_0),
% and the gravitational acceleration(g) due to the planet
% the thrower resides on. (For earth g = 9.8 m/s^2).

% time_of_fall(h, v_0, g) = [t_ascending, t_descending]

% Imputs:
% h measured in length
% v_0 is measured as velocity
% g is measured as acceleration

% Outputs:
% Time.
% Two times are given because the object reaches the given height at two
% different times. Once while ascending and the other while descending.

time_of_fall(100, 50, 9.81)
```

```
falling_time =

    2.7324    7.4612

ans =
```

```
    2.7324    7.4612
```

Problem 12

see figure P12.

```
% Method 1 (see comand window).


% Method 2.

% Figure_P12_Lengths(W, A) = [L, L_Total]

% Imputs:
% W is the width of the figure
% A is the area of the figure

% Outputs:
% L is the length of the figure
% L_Total is the parameter of the figure

Figure_P12_Lengths(6, 80)
```

```
L =

   11.8333

Length_and_Parameter =

   11.8333   38.1519

ans =

   11.8333   38.1519
```

Command Window

Problem 7

Value of force on one side of cylinder: 100

F_2 =

100

Value of friction coeficient: 0.3

u =

0.3000

The angle that the belt is wrapped around the cylinder: 130

b =

130

b =

2.2689

F_1 =

197.5217

Force on the other side of the belt is
197.5217

Problem 9

Temperature value in degrees F: 32

T_F =

32

T_C =

0

Temperature value in degrees C:
0

Problem 12 (method 1)

Width value: 6

W =

6

Total area: 80

A =

80

L =

11.8333

L_Total =

38.1519

Length of fence requred:
11.8333

Total length of fence requred:
38.1519

L =

11.8333

Length_and_Parameter =

11.8333   38.1519

ans =

11.8333   38.1519

```
%% Function created for problem 10.

function falling_time = time_of_fall(h, v_0, g)

falling_time = ...
    [(v_0 - (v_0^2 - 2*g*h)^(1/2))/g, (v_0 + (v_0^2 - 2*g*h)^(1/2))/g]



%% Function for problem number 12

function Length_and_Parameter = Figure_P12_Lengths(W, A)

L = (A - (W*cos(pi/4))^2/2)/W
Length_and_Parameter = ...
    [L, (W + 2*(L) + 2*W*cos(pi/4))]
```