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Aaron Klapheck

57/60

```
% Quiz 3
clear, clc
Date = date
```

Date =

24-Oct-2007

Problem 1.

```
% The MATLAB command used is conv(f, g) which takes the polynomials f
% and g and finds their product (the notation used is the same
% for the inner product space of polynomials - see a linear algebra text).
% The answer is given in polynomial inner product space notation,
% i.e. a + bx + cx + ... + zx = [z, ..., c, b, a]. Not quite -1 (total -3)
```

```
f = [4, 0, 3, 2]
g = [5, -7, 12, -1]
Product = conv(f, g)
```

f =

```
4    0    3    2
```

g =

```
5   -7   12   -1
```

Product =

```
20  -28  63  -15  22  21  -2
```

This is $20x^6 - 28x^5 + 63x^4 + 21x - 2$

Problem 2

```
x = 3;
f = [14, -6, 3, 9];
f_at_x = polyval(f, x);
g = [5, 7, -4];
g_at_x = polyval(g, x);
f_at_x/g_at_x
```

ans =

5.5161

OK

Problem 3.

```
% I would not use atan(y/x) because in this case the angle is located
% in the fourth quadrant and atan(y/x) doesn't take into account whether
% the y or the x value is negative, just that y/x is negative.
% I would use atan2(y,x), because this function accurately takes into
% account which quadrant the (x,y) value is in.
```

```
Angle = atan2(-5,3)           OK
```

Angle =

-1.0304

Problem 4.

```
% For the function Seconds_to_Minutes
% input: seconds (s)
% output: minutes
```

```
Seconds_to_Minutes(12345);    OK
```

Minutes =

205.7500

Problem 5.

```
% For the function Area_Volume_Sphere
% input: radius (r) - in cm
% output: Surface Area (A) - in cm^2 and Volume (V) - in cm^3
```

```
[V,A] = ball(10);           OK
```

V =

4.1888e+003

A =

1.2566e+003

```
%% Function for Problem #4
```

```
function Minutes = Seconds_to_Minutes(s)
```

OK

```
Minutes = s./60
```

```
%% Function for Problem #5
```

```
function [V,A] = ball(r)
```

OK

```
V = 4/3*pi.*r.^3
```

```
A = 4*pi.*r.^2
```