**ENGR 1204 Programming Languages in Engineering**

**MATLAB Lab 4**

Last name: Alshammari

First name: Abdullah

Student Id: 1976769

**Matlab code**

**script.m**

disp('For Cylinder')

fprintf('Radius Height Volume Area\n')

for r=0.5:0.02:1

h = 1 / (r^2);

vals = cylinder(r, h);

fprintf('%.4f\t%.4f\t%.4f\t%.4f\n', r, h, vals(1), vals(2));

end

fprintf('\n\n')

disp('For Sphere')

r = (3/4)^(1/3)

vals = sphere(r);

fprintf('Volumn : %.4f\nArea : %.4f\n', vals(1), vals(2));

fprintf('\n\n')

fprintf('Cylinder has a area of 11.8752 when radius is 0.8000\nCompared to 10.3733 area of Sphere.\nSo Sphere always has minimum area\n');

**sphere.m**

function vals = sphere(r)

volumn = (4/3) \* pi \* (r^3);

area = 4 \* pi \* (r^2);

vals = [volumn, area];

end

**cylinder.m**

function vals = cylinder(r, h)

volumn = pi \* (r^2) \* h;

area = 2 \* pi \* r \* (r + h);

vals = [volumn, area];

end

**Output**

For Cylinder

Radius Height Volume Area

0.5000 4.0000 3.1416 14.1372

0.5200 3.6982 3.1416 13.7820

0.5400 3.4294 3.1416 13.4677

0.5600 3.1888 3.1416 13.1904

0.5800 2.9727 3.1416 12.9467

0.6000 2.7778 3.1416 12.7339

0.6200 2.6015 3.1416 12.5494

0.6400 2.4414 3.1416 12.3911

0.6600 2.2957 3.1416 12.2569

0.6800 2.1626 3.1416 12.1453

0.7000 2.0408 3.1416 12.0547

0.7200 1.9290 3.1416 11.9838

0.7400 1.8262 3.1416 11.9315

0.7600 1.7313 3.1416 11.8965

0.7800 1.6437 3.1416 11.8781

0.8000 1.5625 3.1416 11.8752

0.8200 1.4872 3.1416 11.8872

0.8400 1.4172 3.1416 11.9134

0.8600 1.3521 3.1416 11.9531

0.8800 1.2913 3.1416 12.0057

0.9000 1.2346 3.1416 12.0707

0.9200 1.1815 3.1416 12.1476

0.9400 1.1317 3.1416 12.2361

0.9600 1.0851 3.1416 12.3356

0.9800 1.0412 3.1416 12.4458

1.0000 1.0000 3.1416 12.5664

For Sphere

r = 0.9086

Volumn : 3.1416

Area : 10.3733

Cylinder has a area of 11.8752 when radius is 0.8000

Compared to 10.3733 area of Sphere.

So Sphere always has minimum area