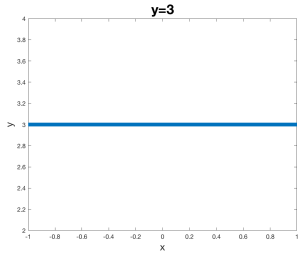
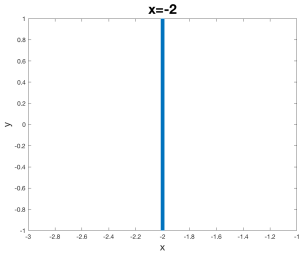
1. Graph each plot in 2-dimensional space

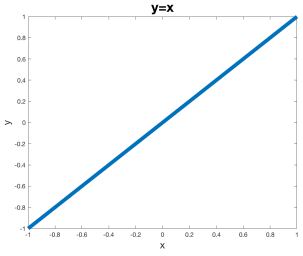
a.) $\mathbf{y = 3}$



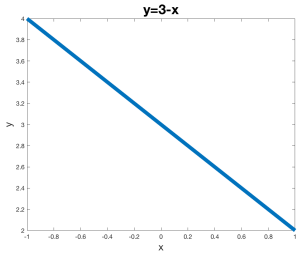
b.) $\mathbf{x = -2}$



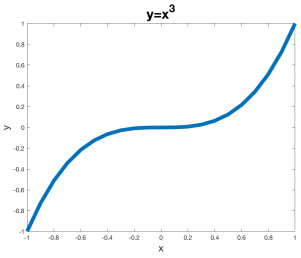
c.) $\mathbf{y = x}$



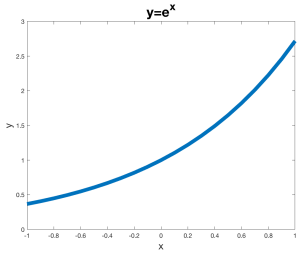
d.) $\mathbf{y = 3 - x}$



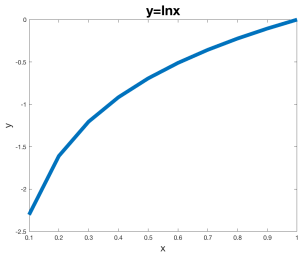
e.) $\mathbf{y = x^3}$



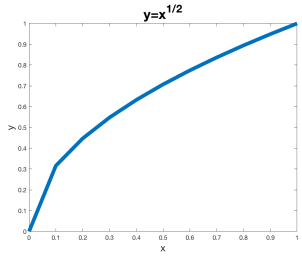
f.) $\mathbf{y = e^x}$



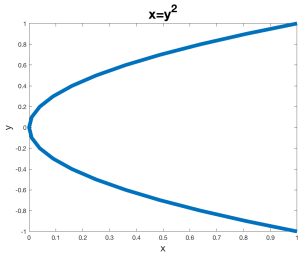
g.) $\mathbf{y = \ln x}$



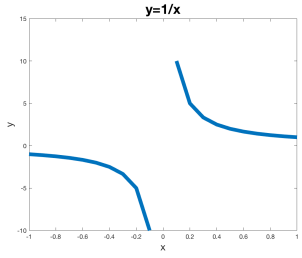
h.) $\mathbf{y = \sqrt{x}}$



i.) $\mathbf{x = y^2}$

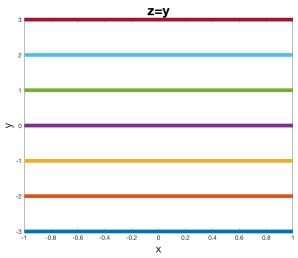


j.) $\mathbf{y = \frac{1}{x}}$

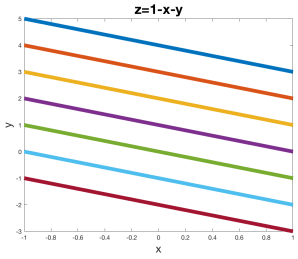


2. Sketch the level curves for each of the following equations (surfaces) using the following values of z : $-3, -2, -1, 0, 1, 2, 3$.

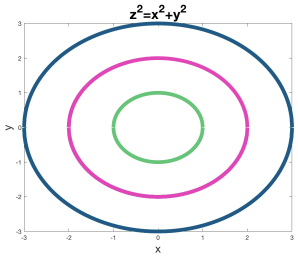
a.) $\mathbf{z = y}$



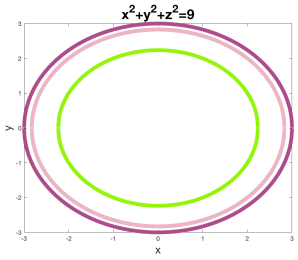
b.) $\mathbf{z = 1 - x - y}$



c.) $\mathbf{z^2 = x^2 + y^2}$

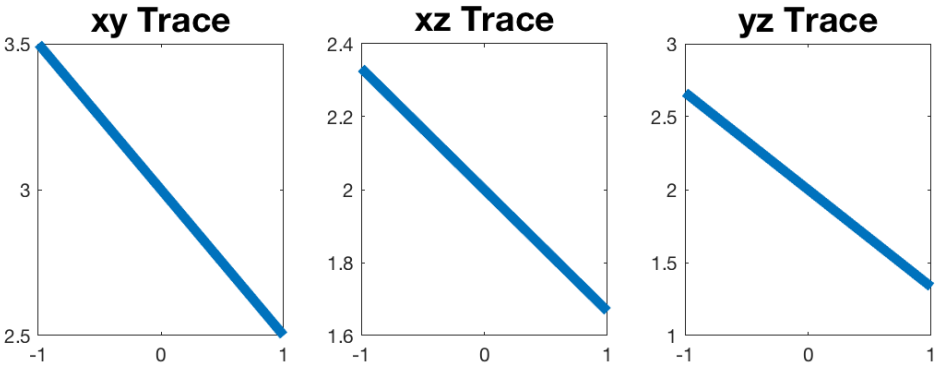


d.) $\mathbf{x^2 + y^2 + z^2 = 9}$

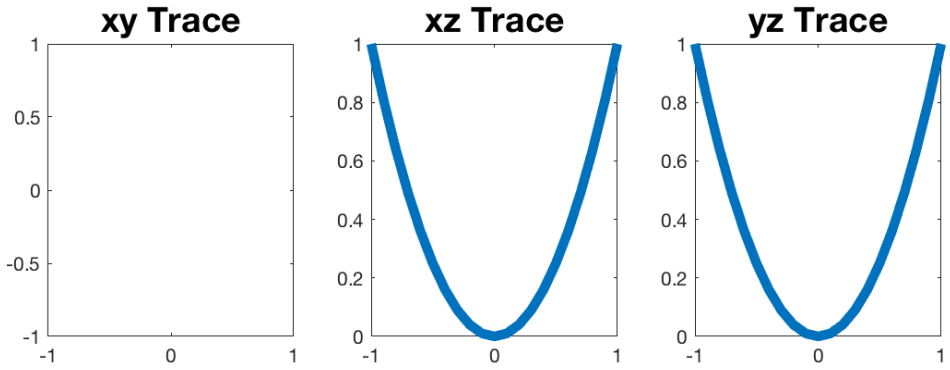


3. Sketch all three coordinate plane traces for each of the following equations (surfaces).

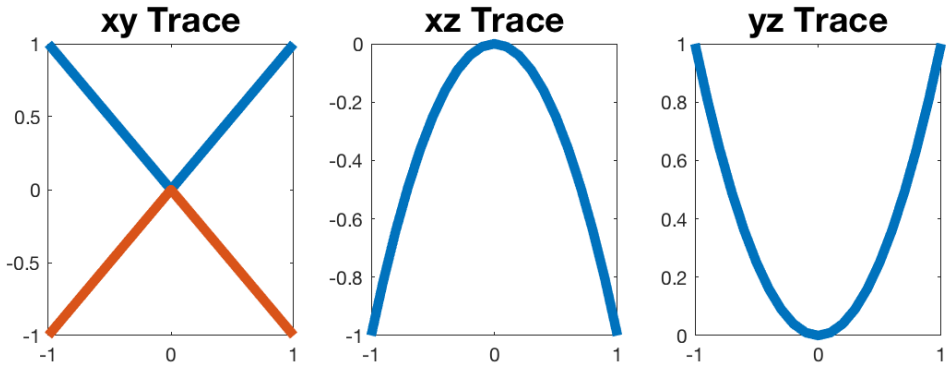
a.) $\mathbf{x + 2y + 3z = 6}$



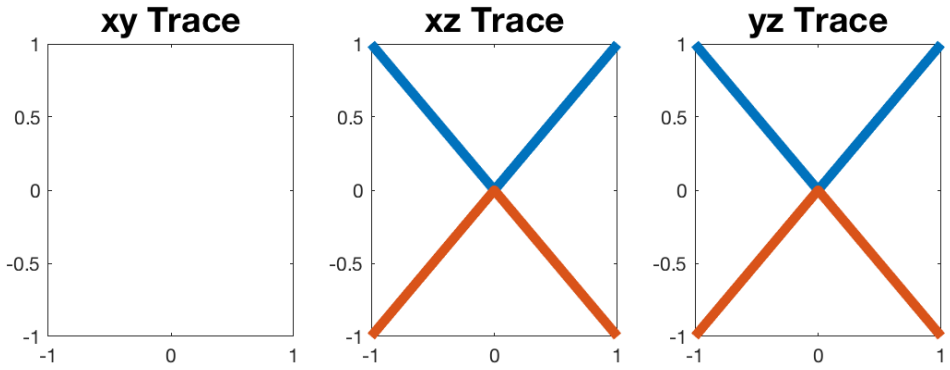
b.) $\mathbf{z = x^2 + y^2}$



c.) $\mathbf{z = y^2 - x^2}$

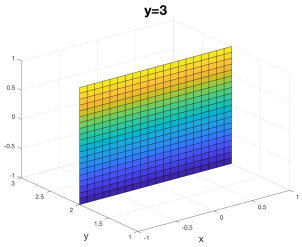


d.) $\mathbf{z^2 = x^2 + y^2}$

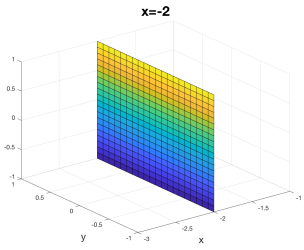


4. Sketch in three-dimensional space each of the following equations (surfaces). Use intercepts, traces, and/or level curves, if necessary.

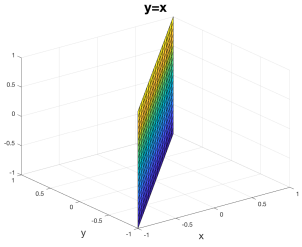
a.) $\mathbf{y = 3}$



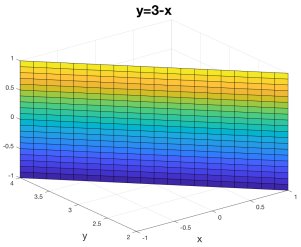
b.) $\mathbf{x = -2}$



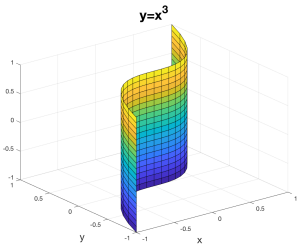
c.) $\mathbf{y = x}$



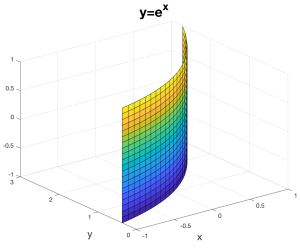
d.) $\mathbf{y = 3 - x}$



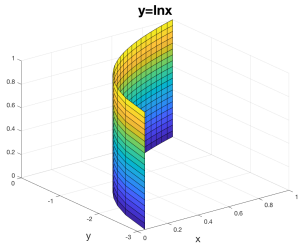
e.) $\mathbf{y = x^3}$



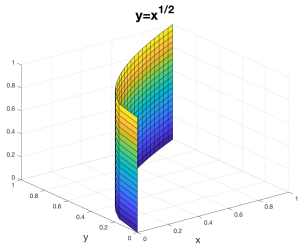
f.) $\mathbf{y = e^x}$



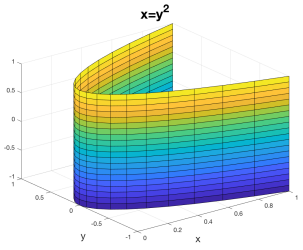
g.) $\mathbf{y = \ln x}$



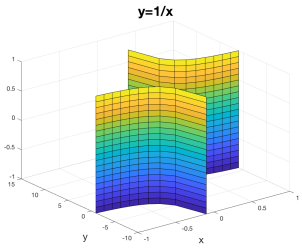
h.) $\mathbf{y = \sqrt{x}}$



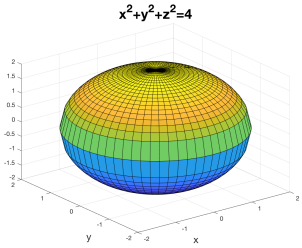
i.) $\mathbf{x = y^2}$



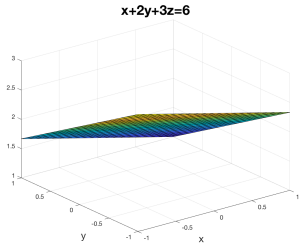
j.) $\mathbf{y = \frac{1}{x}}$



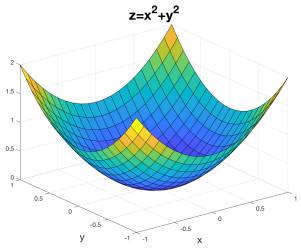
k.) $\mathbf{x^2 + y^2 + z^2 = 4}$



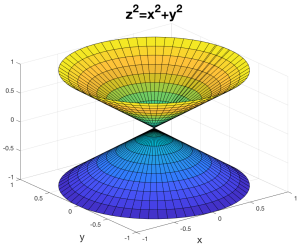
l.) $\mathbf{x + 2y + 3z = 6}$



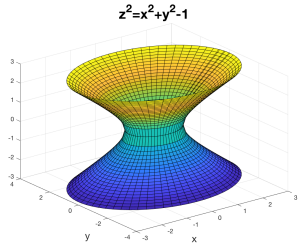
m.) $\mathbf{z = x^2 + y^2}$



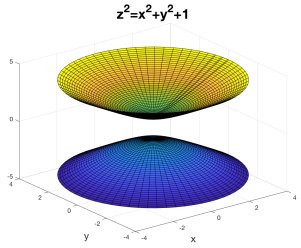
n.) $\mathbf{z^2 = x^2 + y^2}$



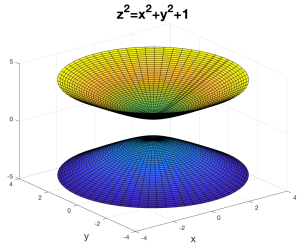
o.) $\mathbf{z^2 = x^2 + y^2 - 1}$



p.) $\mathbf{z^2 = x^2 + y^2 + 1}$



q.) $\mathbf{z = y^2 - x^2}$



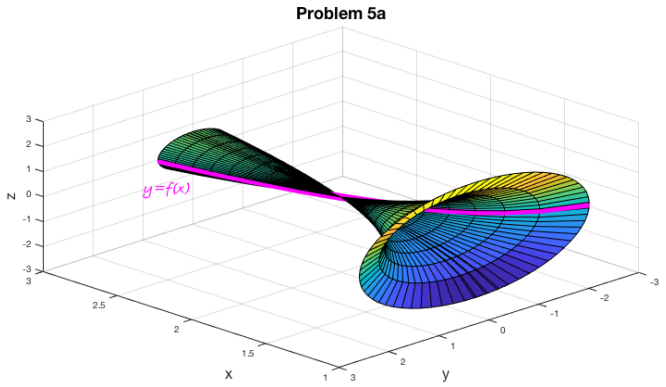
5. a.) Consider the graph of $\mathbf{y = \ln(x - 1)}$ in the xy−plane. Find an equation for the surface created by revolving this graph about the

i.) x−axis

The way to do this is consider many circles whos radius is the difference between the x-axis and y. Thus what we have is a circle given by

$$z^2 + y^2 = r^2$$

This is a circle in the yz plane. Using polar coordinates we get $y = r\sin\theta$ and $z = r\cos\theta$, but $r = f(x) = \ln(x - 1)$. Moreover, θ goes from 0 to 2π since we are revolving about the x axis.



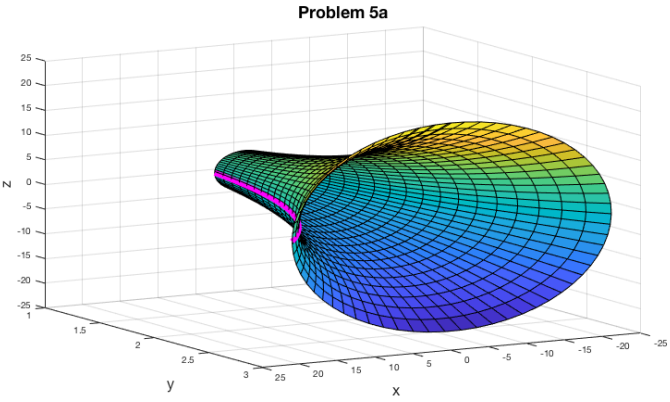
1. Rotating $y = \ln(x-1)$ about the x-axis.

ii.) y−axis

Similar to part **ii**, we have circles in the zx plane with radius

$$r = x = e^y + 1$$

thus we get $z = r\sin\theta = (e^y+1)\cos\theta$, $x = r\cos\theta = (e^y+1)\cos\theta$.



2. Rotating $x = e^y + 1$ about the y-axis.

b.) Consider the graph of z = sin(x) in the xz−plane. Find an equation for the surface created by revolving this graph about the

i.) x−axis

$$z^2 + y^2 = \sin(x)^2$$

ii.) z−axis

$$x^2 + y^2 = \arcsin(z)^2$$

6. Determine and sketch the domain of each function in 2D-Space and find the range of each function.

a.) $\mathbf{z = 1 + x^2 + y^2}$

There are no values that cause $1 + x^2 + y^2$ to be undefined. So the domain is $\mathbb{R}^2$. This creates a paraboloid starting at $z = 1$, so the range is $z \in [1, \infty)$.

b.) $\mathbf{z = 1 - x^2 - y^2}$

Again, no values of x or y are bad, so the domain is $\mathbb{R}^2$. This creates an inverted paraboloid starting at $z = 1$, so the range is $z \in (-\infty, 1]$.

c.) $\mathbf{z = 1 - x^2 + y^2}$

Again, no values of x or y are bad, so the domain is $\mathbb{R}^2$. This is a hyperbola in the xy plane. But since the range is only concerned with values of z, we could hold x constant and y^2 gives us $[0, \infty)$ and hold y constant and $-x^2$ gives us $(\infty, 0]$. Thus the range is $z \in \mathbb{R}$.

d.) $\mathbf{z = 1 - x - y}$

This is a plane, which is basically a line, so domain is $\mathbb{R}^2$, range is $\mathbb{R}$.

e.) $\mathbf{f(x, y) = \sqrt{1 - x - y}}$

Now we have to worry about a bad domain. In this case we need the $1 - x - y \geq 0$ or $y \geq x - 1$. Thus our domain is $\{x, y | y \geq x - 1\}$. Note that obviously $\sqrt{x} \geq 0$ so the range is $z \in [0, \infty)$.

f.) $\mathbf{f(x, y) = \sqrt{1 - x^2 - y^2}}$

We need $1 - x^2 - y^2 \geq 0 \iff x^2 + y^2 \leq 1$, thus our domain is $\{x, y | x^2 + y^2 \leq 1\}$. The easiest way to determine this range is to consider that

$$z = \sqrt{1 - x^2 - y^2} \iff z^2 + x^2 + y^2 = 1$$

which is a sphere of radius 1. However, since we are only looking at the positive square root, this is only the top half of the sphere. Thus the range is $z \in [0, 1)$.

g.) $\mathbf{f(x, y) = 5 + e^{-x^2 - y^2}}$

Any value of x and y can go into $e^{-x^2 - y^2}$ so the domain is $\mathbb{R}^2$. Note that the largest value that $-x^2 - y^2$ can be is 0, so the largest value $5 + e^{-x^2 - y^2}$ can be is $5 + e^0 = 6$. Moreover

$$\lim_{x \to \infty} e^{-x} = \lim_{x \to \infty} \frac{1}{e^x} = 0$$

Therefore we have $z \in (5, 6]$ as the range.

h.) $\mathbf{f(x, y) = 3 - \sqrt{y - \ln x}}$

Domain: $\{x, y | y \geq \ln x, x > 0\}$
Range: $z \in (-\infty, 3]$.

i.) $\mathbf{z = 3\cos x + 4\sin y}$

Domain: $\mathbb{R}^2$
Range: $z \in [-7, 7]$.

j.) $\mathbf{z = 2 - 5\sin\ln y}$

Domain: $\{x, y | y > 0\}$
Range: $z \in [2-1, 2+1] = [1, 3]$.

k.) $\mathbf{z = \ln\left(25 - x^2 - y^2\right)}$

Domain: $\{x, y | x^2 + y^2 \leq 25\}$
Range: $z \in (0, \ln(25)]$.

l.) $\mathbf{f(x, y) = \ln\left(x^2 + y^2 - 25\right)}$

m.) $\mathbf{f(x, y) = \frac{7}{x^2 - y}}$

n.) $\mathbf{f(x, y) = \frac{7}{x^2 + y^2}}$

o.) $\mathbf{f(x, y) = \frac{8}{2 + \sqrt{x - 2y}}}$

p.) $\mathbf{z = \frac{8}{2 - \ln(x + y)}}$

Code

```
% ------------------------------------------------------
% Problem 1 - Plot the following on 2D plots
% ------------------------------------------------------
% a) y=3
figure;
x = -1:.1:1; y = zeros(length(x),1)+3;
plot(x,y,'Linewidth',6); title('y=3','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1a.png')
% b) x=-2
figure;
y = -1:.1:1; x = zeros(length(x),1)-2;
plot(x,y,'Linewidth',6); title('x=-2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1b.png')
% c) y=x
figure;
x = -1:.1:1; y = x;
plot(x,y,'Linewidth',6); title('y=x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1c.png')
% d) y=3-x
figure;
x = -1:.1:1; y = 3-x;
plot(x,y,'Linewidth',6); title('y=3-x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1d.png')
% e) y=x^3
figure;
x = -1:.1:1; y = x.^3;
plot(x,y,'Linewidth',6); title('y=x^3','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1e.png')
% f) y=e^x
figure;
x = -1:.1:1; y = exp(x);
plot(x,y,'Linewidth',6); title('y=e^x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1f.png')
% g) y=lnx
figure;
x = 0:.1:1; y = log(x); % Note log(x) = ln(x)
plot(x,y,'Linewidth',6); title('y=lnx','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1g.png')
% h) y=sqrt(x)
figure;
x = 0:.1:1; y = sqrt(x);
plot(x,y,'Linewidth',6); title('y=x^{1/2}','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1h.png')
% i) x=y^2
figure;
y = -1:.1:1; x = y.^2;
plot(x,y,'Linewidth',6); title('x=y^2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1i.png')
% j) y=1/x
figure;
x = -1:.1:1; y = 1./x;
plot(x,y,'Linewidth',6); title('y=1/x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'1j.png')
```

```
64
65 % ------------------------------------------------------------
66 % Problem 2 - Plot level curves of the following
67 % ------------------------------------------------------------
68 zs = -3:3;
69 % a) z=y
70 figure;
71 x = -1:.1:1;
72 for z=zs
73    y=zeros(1,length(x))+z;
74    plot(x,y,'Linewidth',6);hold on;
75 end
76 title('z=y','Fontsize',22);
77 xlabel('x','Fontsize',18);ylabel('y','Fontsize',18);
78 saveas(gcf,'2a.png')
79 % b) z=1-x-y
80 figure;
81 x = -1:.1:1;
82 for z=zs
83    y=1-zeros(1,length(x))-z-x;
84    plot(x,y,'Linewidth',6);hold on;
85 end
86 title('z=1-x-y','Fontsize',22);
87 xlabel('x','Fontsize',18);ylabel('y','Fontsize',18);
88 saveas(gcf,'2b.png')
89 % c) z^2=x^2+y^2
90 figure;
91 x = -3:.00001:3;
92 for z=zs
93    col = [rand(1),rand(1),rand(1)];
94    % Plot top of circle
95    y=sqrt((zeros(1,length(x))-z).^2-x.^2);
96    y(real(y)==0)=NaN;
97    plot(x,y,'Linewidth',6,'Color',col);hold on;
98    % Plot bottom of circle
99    y=-sqrt((zeros(1,length(x))-z).^2-x.^2);
100   y(real(y)==0)=NaN;
101   plot(x,y,'Linewidth',6,'Color',col);hold on;
102 end
103 title('z^2=x^2+y^2','Fontsize',22);
104 xlabel('x','Fontsize',18);ylabel('y','Fontsize',18);
105 saveas(gcf,'2c.png')
106 % d) x^2+y^2+z^2=9
107 figure;
108 x = -3:.00001:3;
109 for z=zs
110    col = [rand(1),rand(1),rand(1)];
111    % Plot top of circle
112    y=sqrt(9-(zeros(1,length(x))-z).^2-x.^2);
113    y(real(y)==0)=NaN;
114    plot(x,y,'Linewidth',6,'Color',col);hold on;
115    % Plot bottom of circle
116    y=-sqrt(9-(zeros(1,length(x))-z).^2-x.^2);
117    y(real(y)==0)=NaN;
118    plot(x,y,'Linewidth',6,'Color',col);hold on;
119 end
120 title('x^2+y^2+z^2=9','Fontsize',22);
121 xlabel('x','Fontsize',18);ylabel('y','Fontsize',18);
122 saveas(gcf,'2d.png')
123
124
125
126
127
128
```

```
% ------------------------------------------------------------
% Problem 3 - Plot the plane traces
% ------------------------------------------------------------
% a) x+2y+3z=6
a = -1:.1:1; figure;
% Plot xy trace
x = a; y = (1/2)*(6-x);
subplot(1,3,1);
plot(x,y,'Linewidth',5);
title('xy Trace','Fontsize',18);
% Plot xz trace
x = a; z = (1/3)*(6-x);
subplot(1,3,2);
plot(x,z,'Linewidth',5);
title('xz Trace','Fontsize',18);
% Plot yz trace
y = a; z = (1/3)*(6-2*y);
subplot(1,3,3);
plot(y,z,'Linewidth',5);
title('yz Trace','Fontsize',18);
set(gcf, 'Position', [100 200 600 200])
saveas(gcf,'3a.png');

% b) z=x^2+y^2
a = -1:.1:1; figure;
% Plot xy trace
x = 0;
subplot(1,3,1);
plot(x,sqrt(-x.^2),'Linewidth',5);hold on;
plot(x,-sqrt(-x.^2),'Linewidth',5);
title('xy Trace','Fontsize',18);
% Plot xz trace
x = a; z = x.^2;
subplot(1,3,2);
plot(x,z,'Linewidth',5);
title('xz Trace','Fontsize',18);
% Plot yz trace
y = a; z = y.^2;
subplot(1,3,3);
plot(y,z,'Linewidth',5);
title('yz Trace','Fontsize',18);
set(gcf, 'Position', [100 200 600 200])
saveas(gcf,'3b.png');

% c) z=y^2-x^2
a = -1:.1:1; figure;
% Plot xy trace
x = a;
subplot(1,3,1);
plot(x,sqrt(x.^2),'Linewidth',5);hold on;
plot(x,-sqrt(x.^2),'Linewidth',5);
title('xy Trace','Fontsize',18);
% Plot xz trace
x = a; z = -x.^2;
subplot(1,3,2);
plot(x,z,'Linewidth',5);
title('xz Trace','Fontsize',18);
% Plot yz trace
y = a; z = y.^2;
subplot(1,3,3);
plot(y,z,'Linewidth',5);
title('yz Trace','Fontsize',18);
set(gcf, 'Position', [100 200 600 200])
saveas(gcf,'3c.png');

```

```
% d) z^2=x^2+y^2
a = -1:.1:1; figure;
% Plot xy trace
x = a;
subplot(1,3,1);
plot(0,0,'Linewidth',5);
title('xy Trace','Fontsize',18);
% Plot xz trace
x = a;
subplot(1,3,2);
plot(x,sqrt(x.^2), 'Linewidth',5); hold on;
plot(x,-sqrt(x.^2),'Linewidth',5);
title('xz Trace','Fontsize',18);
% Plot yz trace
y = a; z = y.^2;
subplot(1,3,3);
plot(y,sqrt(y.^2), 'Linewidth',5); hold on;
plot(y,-sqrt(y.^2),'Linewidth',5);
title('yz Trace','Fontsize',18);
set(gcf, 'Position', [100 200 600 200])
saveas(gcf,'3d.png');


% ------------------------------------------------------
% Problem 4 - Plot the following on 3D plots
% ------------------------------------------------------
% a) y=3
figure;
[x,z] = meshgrid(-1:.1:1); y = zeros(size(x))+2;
surf(x,y,z); title('y=3','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4a.png')
% b) x=-2
figure;
[y,z] = meshgrid(-1:.1:1); x = zeros(size(x))-2;
surf(x,y,z); title('x=-2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4b.png')
% c) y=x
figure;
[x,z] = meshgrid(-1:.1:1); y = x;
surf(x,y,z); title('y=x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4c.png')
% d) y=3-x
figure;
[x,z] = meshgrid(-1:.1:1); y = 3-x;
surf(x,y,z); title('y=3-x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4d.png')
% e) y=x^3
figure;
[x,z] = meshgrid(-1:.1:1); y = x.^3;
surf(x,y,z); title('y=x^3','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4e.png')
% f) y=e^x
figure;
[x,z] = meshgrid(-1:.1:1); y = exp(x);
surf(x,y,z); title('y=e^x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4f.png')
% g) y=lnx
figure;
[x,z] = meshgrid(0:.05:1); y = log(x); % Note log(x) = ln(x)
```

```
surf(x,y,z); title('y=lnx','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4g.png')
% h) y=sqrt(x)
figure;
[x,z] = meshgrid(0:.05:1); y = sqrt(x);
surf(x,y,z); title('y=x^{1/2}','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4h.png')
% i) x=y^2
figure;
[y,z] = meshgrid(-1:.1:1); x = y.^2;
surf(x,y,z); title('x=y^2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4i.png')
% j) y=1/x
figure;
[x,z] = meshgrid(-1:.1:1); y = 1./x;
surf(x,y,z); title('y=1/x','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4j.png')
% k) x^2+y^2+z^2=4
figure;
[r,theta] = meshgrid(0:.1:2,0:.1:2*pi); % Polar coords
x = r.*cos(theta); y = r.*sin(theta);
surf(x,y,real(sqrt(4-x.^2-y.^2)));hold on;
surf(x,y,-real(sqrt(4-x.^2-y.^2))); title('x^2+y^2+z^2=4','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4k.png')
% l) x+2y+3z=6
figure;
[x,y] = meshgrid(-1:.1:1);
z = (1/3)*(6-2*y-x);
surf(x,y,z); title('x+2y+3z=6','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4l.png')
% m) z=x^2+y^2
figure;
[x,y] = meshgrid(-1:.1:1);
z = x.^2+y.^2;
surf(x,y,z); title('z=x^2+y^2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4m.png')
% n) z^2=x^2+y^2
figure;
[r,theta] = meshgrid(0:.1:1,0:.1:2.1*pi); % Polar coords
x = r.*cos(theta); y = r.*sin(theta);
surf(x,y,real(sqrt(x.^2+y.^2)));hold on;
surf(x,y,-real(sqrt(x.^2+y.^2))); title('z^2=x^2+y^2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4n.png')
% o) z^2=x^2+y^2-1
figure;
[r,theta] = meshgrid(0:.1:3,0:.1:2.1*pi); % Polar coords
x = r.*cos(theta); y = r.*sin(theta);
surf(x,y,real(sqrt(x.^2+y.^2-1)));hold on;
surf(x,y,-real(sqrt(x.^2+y.^2-1))); title('z^2=x^2+y^2-1','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4o.png')
% p) z^2=x^2+y^2+1
figure;
[r,theta] = meshgrid(0:.1:4,0:.1:2.1*pi); % Polar coords
x = r.*cos(theta); y = r.*sin(theta);
surf(x,y,real(sqrt(x.^2+y.^2+1)));hold on;
surf(x,y,-real(sqrt(x.^2+y.^2+1))); title('z^2=x^2+y^2+1','Fontsize',22);
```

```
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4p.png')
% q) z=y^2-x^2
figure;
[x,y] = meshgrid(-1:.1:1);
z = y.^2-x.^2;
surf(x,y,z); title('z=y^2-x^2','Fontsize',22);
xlabel('x','Fontsize',16);ylabel('y','Fontsize',16);
saveas(gcf,'4q.png')


% ------------------------------------------------------
% Problem 5 - Revolve around axes
% ------------------------------------------------------
% a)i) y=ln(x-1)
figure;
[x,t] = meshgrid(1.1:.1:3,0:.1:2.1*pi);
y = log(x-1).*sin(t);
z = log(x-1).*cos(t);
surf(x,y,z); hold on;
[x,~] = meshgrid(1.1:.1:3);
surf(x,log(x-1),zeros(size(x)));
title('Problem 5a','Fontsize',18);xlabel('x','Fontsize',16);
ylabel('y','Fontsize',16);zlabel('z','Fontsize',16);

% a)ii) x=e^y+1
figure;
[y,t] = meshgrid(1.1:.1:3,0:.1:2.1*pi);
x = (exp(y)+1).*sin(t);
z = (exp(y)+1).*cos(t);
surf(x,y,z); hold on;
[y,~] = meshgrid(1.1:.1:3);
surf(exp(y)+1,y,zeros(size(y)));
title('Problem 5a','Fontsize',18);xlabel('x','Fontsize',16);
ylabel('y','Fontsize',16);zlabel('z','Fontsize',16);

% b)i) z=sin(x)
figure;
[x,t] = meshgrid(1.1:.1:3,0:.1:2.1*pi);
y = sin(x).*sin(t);
z = sin(x).*cos(t);
surf(x,y,z); hold on;
[x,~] = meshgrid(1.1:.1:3);
surf(x,zeros(size(x)),sin(x));
title('Problem 5b i','Fontsize',18);xlabel('x','Fontsize',16);
ylabel('y','Fontsize',16);zlabel('z','Fontsize',16);

% b)ii) x=acos(z)
figure;
[y,t] = meshgrid(1.1:.1:3,0:.1:2.1*pi);
x = (exp(y)+1).*sin(t);
z = (exp(y)+1).*cos(t);
surf(x,y,z); hold on;
[y,~] = meshgrid(1.1:.1:3);
surf(exp(y)+1,y,zeros(size(y)));
title('Problem 5a','Fontsize',18);xlabel('x','Fontsize',16);
ylabel('y','Fontsize',16);zlabel('z','Fontsize',16);
```