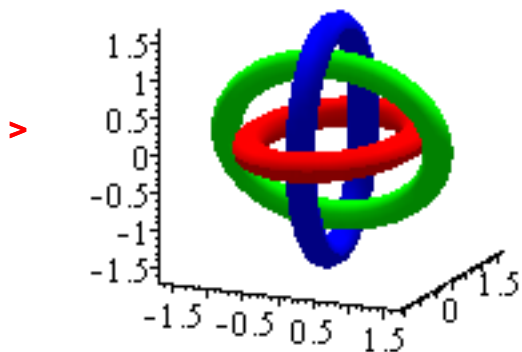
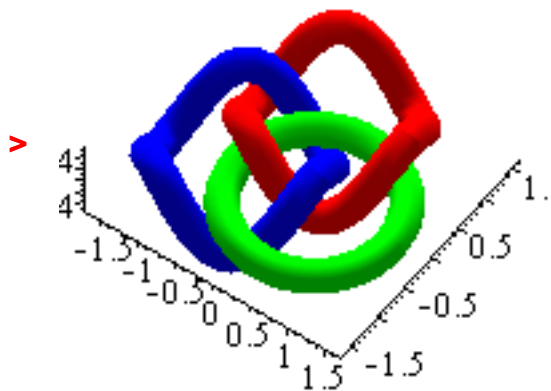


2/9/12

Here are two ways to make the rings for problem 3.



```
> read("/home/scott/www/mat331.spr12/problems/somelinedata.txt");
```

```
data := [[6.399555221, -2.975032259], [0.972268069, 4.644979231], [-0.174930733,  
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006],  
[1.510235158, 4.569017281], [0.955599370, 4.097468044], [-5.712634201,  
9.544519402], [0.691425053, 3.830846574], [-6.708865618, 9.962202300],  
[3.761176009, 1.978739404], [3.172070319, 0.432025264], [-2.684165704,  
7.561362842], [-4.250626903, 8.100249035], [0.201116234, 3.609631780],  
[5.514142588, -0.466174813], [4.722721945, 1.119994312], [7.636264182,  
-3.679228223], [-4.873069134, 7.999031928], [-5.019405423, 8.742503689],  
[4.811048112, -0.901298665], [-0.504420785, 6.102454305], [6.576501459,  
-3.495854902], [-0.796916715, 3.623549343], [1.325774350, 2.186174499]]
```

```
> data := [[6.399555221, -2.975032259], [0.972268069, 4.644979231],  
[-0.174930733,  
2.313538498], [-5.073540384, 9.514984401], [6.893861527,  
-1.071097006], [1.510\
```

(1)

```

> 235158, 4.569017281], [.955599370, 4.097468044], [-5.712634201,
9.544519402],
> [.691425053, 3.830846574], [-6.708865618, 9.962202300],
[3.761176009, 1.978739\
> 404], [3.172070319, .432025264], [-2.684165704, 7.561362842],
[-4.250626903, 8\
> .100249035], [.201116234, 3.609631780], [5.514142588,
-.466174813], [4.7227219\
> 45, 1.119994312], [7.636264182, -3.679228223], [-4.873069134,
7.999031928], [-\
> 5.019405423, 8.742503689], [4.811048112, -.901298665],
[-.504420785, 6.1024543\
> 05], [6.576501459, -3.495854902], [-.796916715, 3.623549343],
[1.325774350, 2.\
> 186174499]];

```

```

data := [[6.399555221, -2.975032259], [0.972268069, 4.644979231], [-0.174930733,
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006],
[1.510235158, 4.569017281], [0.955599370, 4.097468044], [-5.712634201,
9.544519402], [0.691425053, 3.830846574], [-6.708865618, 9.962202300],
[3.761176009, 1.978739404], [3.172070319, 0.432025264], [-2.684165704,
7.561362842], [-4.250626903, 8.100249035], [0.201116234, 3.609631780],
[5.514142588, -0.466174813], [4.722721945, 1.119994312], [7.636264182,
-3.679228223], [-4.873069134, 7.999031928], [-5.019405423, 8.742503689],
[4.811048112, -0.901298665], [-0.504420785, 6.102454305], [6.576501459,
-3.495854902], [-0.796916715, 3.623549343], [1.325774350, 2.186174499]]

```

(2)

```

> read("/tmp/somelinedata.txt");

```

```

data := [[6.399555221, -2.975032259], [0.972268069, 4.644979231], [-0.174930733,
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006],
[1.510235158, 4.569017281], [0.955599370, 4.097468044], [-5.712634201,
9.544519402], [0.691425053, 3.830846574], [-6.708865618, 9.962202300],
[3.761176009, 1.978739404], [3.172070319, 0.432025264], [-2.684165704,
7.561362842], [-4.250626903, 8.100249035], [0.201116234, 3.609631780],
[5.514142588, -0.466174813], [4.722721945, 1.119994312], [7.636264182,
-3.679228223], [-4.873069134, 7.999031928], [-5.019405423, 8.742503689],
[4.811048112, -0.901298665], [-0.504420785, 6.102454305], [6.576501459,
-3.495854902], [-0.796916715, 3.623549343], [1.325774350, 2.186174499]]

```

(3)

```

> with(HTTP);

```

```

    [Code, Form, Get, Post, URLDecode, URLEncode, URLParse]

```

(4)

```

> Get("http://www.math.sunysb.edu/~scott/mat331.
spr12/problems/somelinedata.txt");

```

```

200, "data := [[6.399555221, -2.975032259], [972268069, 4.644979231], [-.174930733,
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006], [1.510\
235158, 4.569017281], [.955599370, 4.097468044], [-5.712634201, 9.544519402],
[.691425053, 3.830846574], [-6.708865618, 9.962202300], [3.761176009, 1.978739\
404], [3.172070319, .432025264], [-2.684165704, 7.561362842], [-4.250626903, 8\
.100249035], [.201116234, 3.609631780], [5.514142588, -.466174813], [4.7227219\

```

(5)

```
45, 1.119994312], [7.636264182, -3.679228223], [-4.873069134, 7.999031928], [-\
5.019405423, 8.742503689], [4.811048112, -.901298665], [-.504420785, 6.1024543\
05], [6.576501459, -3.495854902], [-.796916715, 3.623549343], [1.325774350, 2.\
186174499]]];
```

```
", table( ["Last-Modified" = "Thu, 09 Feb 2012 17:42:35 GMT", "Server"
= "Apache/2.0.58 (Unix)", "Date" = "Thu, 09 Feb 2012 18:18:22 GMT", "Accept-Ranges"
= "bytes", "Content-Type" = "text/plain; charset=ISO-8859-1", "Etag"
= ""1eeb27d-2da-899438c0"", "Content-Length" = "730"])
```

```
> Get("http://www.math.sunysb.edu/~scott/mat331.
spr12/problems/nosuchfile.txt");
```

```
404, "<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en" >
  <head>
    <title>Object not found! </title>
    <link rev="made" href="mailto:webmaster@math.sunysb.edu" />
    <style type="text/css"> <!--*--> <![CDATA[*> <!--*/
  body { color: #000000; background-color: #FFFFFF; }
    a:link { color: #0000CC; }
    p, address {margin-left: 3em;}
    span {font-size: smaller;}
    /*]]>*/--> </style>
  </head>
  <body >
    <h1 >Object not found! </h1 >
    <p >
```

(6)

The requested URL was not found on this server.

If you entered the URL manually please check your spelling and try again.

</p>

<p >

If you think this is a server error, please contact  
the <a href="mailto:webmaster@math.sunysb.edu">webmaster</a>.

```
</p>
<h2>Error 404</h2>
<address>
<a href="/">www.math.sunysb.edu</a> <br />

<span>Thu Feb 9 13:19:04 2012<br />
Apache/2.0.58 (Unix)</span>
</address>
</body>
</html>
```

```
", table( ["Server" = "Apache/2.0.58 (Unix)", "Content-Language" = "en", "Date"
= "Thu, 09 Feb 2012 18:19:04 GMT", "Accept-Ranges" = "bytes", "Vary"
= "accept-language,accept-charset", "Content-Type" = "text/html; charset=iso-8859-1",
"Transfer-Encoding" = "chunked"])
```

```
> with(HTTP);
```

```
    [Code, Form, Get, Post, URLDecode, URLEncode, URLParse]
```

(7)

```
> number,page,headers:=Get("http://www.math.sunysb.
edu/~scott/mat331.spr12/problems/somelinedata.txt");
```

```
> eval(parse(page));
```

(8)

```
[[6.399555221, -2.975032259], [0.972268069, 4.644979231], [-0.174930733,
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006],
[1.510235158, 4.569017281], [0.955599370, 4.097468044], [-5.712634201,
9.544519402], [0.691425053, 3.830846574], [-6.708865618, 9.962202300],
[3.761176009, 1.978739404], [3.172070319, 0.432025264], [-2.684165704,
7.561362842], [-4.250626903, 8.100249035], [0.201116234, 3.609631780],
[5.514142588, -0.466174813], [4.722721945, 1.119994312], [7.636264182,
-3.679228223], [-4.873069134, 7.999031928], [-5.019405423, 8.742503689],
[4.811048112, -0.901298665], [-0.504420785, 6.102454305], [6.576501459,
-3.495854902], [-0.796916715, 3.623549343], [1.325774350, 2.186174499]]
```

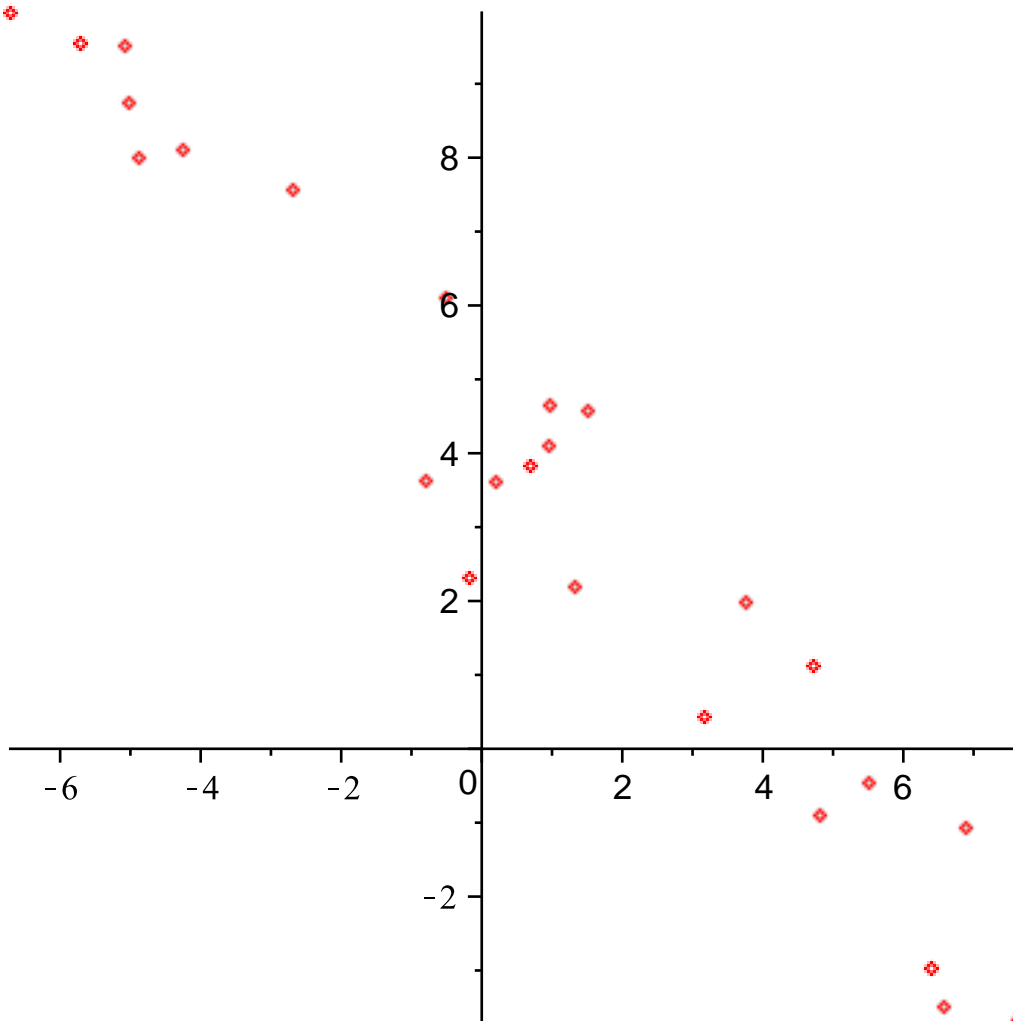
```
> data;
```

```
[[6.399555221, -2.975032259], [0.972268069, 4.644979231], [-0.174930733,
2.313538498], [-5.073540384, 9.514984401], [6.893861527, -1.071097006],
[1.510235158, 4.569017281], [0.955599370, 4.097468044], [-5.712634201,
9.544519402], [0.691425053, 3.830846574], [-6.708865618, 9.962202300],
[3.761176009, 1.978739404], [3.172070319, 0.432025264], [-2.684165704,
7.561362842], [-4.250626903, 8.100249035], [0.201116234, 3.609631780],
[5.514142588, -0.466174813], [4.722721945, 1.119994312], [7.636264182,
-3.679228223], [-4.873069134, 7.999031928], [-5.019405423, 8.742503689],
[4.811048112, -0.901298665], [-0.504420785, 6.102454305], [6.576501459,
```

(9)

```
-3.495854902], [-0.796916715, 3.623549343], [1.325774350, 2.186174499]]
```

```
> with(plots):  
> plot(data,style=point);
```



```
> with(CurveFitting):  
> LeastSquares(data,x);  
4.21682866691290 - 0.934399508040875 x
```

(10)

We know how to write functions one way:

```
> f:= (x,y) -> 3*x^2 + 2*y;  
f:= (x,y) -> 3 x2 + 2 y
```

(11)

```
> f(3,2);  
31
```

(12)

```
> f(apple, rabbit);  
3 apple2 + 2 rabbit
```

(13)

```
> f(3);  
Error, invalid input: f uses a 2nd argument, y, which is missing
```

Here's another, equivalent.

New lines with shift-enter.

```
> g:= proc(x,y)
  a:=3*x^2;
  b:=2*y;
  return(a+b);
end;
Warning, `a` is implicitly declared local to procedure `g`
Warning, `b` is implicitly declared local to procedure `g`
g := proc(x,y) local a, b; a := 3 * x^2; b := 2 * y; return a + b end proc (14)
```

```
> g(3,2);
31 (15)
```

```
> g(3);
Error, invalid input: g uses a 2nd argument, y, which is missing
```

new lines are for me, not for maple.

```
> h:= proc(x,y) a:=3*x^2; b:=2*y; return(a+b); end;
Warning, `a` is implicitly declared local to procedure `h`
Warning, `b` is implicitly declared local to procedure `h`
h := proc(x,y) local a, b; a := 3 * x^2; b := 2 * y; return a + b end proc (16)
```

```
> h(3,2);
31 (17)
```

```
> g:= proc(x,y)
  local a, b;
  a:=3*x^2;
  b:=2*y;
  return(a+b);
end;
g := proc(x,y) local a, b; a := 3 * x^2; b := 2 * y; return a + b end proc (18)
```

```
> a;
a (19)
```

```
> LeastSquares(data,rabbit);
4.21682866691290 - 0.934399508040875 rabbit (20)
```

```
> data[3];
[-0.174930733, 2.313538498] (21)
```

```
> lsq:= proc(data, x)
  local g, m, b;
  g:= sum( ( m*data[i][1] + b - data[i][2])^2 , i=1..
nops(data));
end;
> expand(lsq(data,x));
733.6719671 + 38.69036797 m b + 25 b^2 + 475.0403504 m^2 - 174.6891728 b
+ 724.6042867 m (22)
```

```
> lsq:= proc(data, x)
  local g, m, b, sol;
  g:= sum( ( m*data[i][1] + b - data[i][2])^2 , i=1..
nops(data));
  sol:=solve( {diff(g,m)=0, diff(g,b)=0}, {m,b});
end;
```

