

a	b	c

Name: _____

Please print clearly

Example: In Maple, the surface $z = x^2 - y^2$ can be rendered using the `plot3d` command:

```
plot3d(x*x-y*y, x=-5..5, y=-5..5, style = patchcontour, transparency = .3, axes=boxed);
```

If you omit the style specification you get the default style. Try it!!

```
plot3d(x*x-y*y, x=-5..5, y=-5..5, transparency = .3, axes=boxed);
```

Move the cursor into the “box” where the plot appears; click and drag to rotate the image.

To get a contour plot, one can use

```
with(plots); contourplot(x*x-y*y, x=-5..5, y=-5..5);
```

To plot the surface $z = x^2 - y^2$ together with the plane $z = 6x - 2y - 8$, use

```
plot3d({x*x-y*y, 6*x-2*y-8}, x=-5..5, y=-5..5, style = patchcontour, transparency = .3, axes=boxed);
```

Note that no spaces are allowed between the dots in a `plot` command.

ASSIGNMENT: Let a, b, c be the first three non-zero digits of your WIN number. Record them in the boxes in the top left hand corner of this page.

Consider the surface $z = ax^2 + 2bxy + cy^2$. Let P be the point **on this surface** corresponding to $(x, y) = (1, 1)$.

1. Plot your surface using Maple. Experiment by rotating the plot, and by using the default and/or the `patchcontour` option. Turn in a hard copy of your plot along with the Maple command used to generate it.

Tip: To print a rotated view, use the mouse to slightly resize the box before you print.

2. Plot a contour diagram for your surface in Maple using the `contourplot` command. Check if the contours are consistent with the 3-d plot of the surface. (If not, check your commands.) Turn in a hard copy of your plot along with the Maple command used.

3. Find the equation of the tangent plane to the surface at P . This part is to be done by hand. **Warning:** Disorganized or illegible work will earn negative credit.

Plot your surface again, this time together with the tangent plane at P . Rotate your plot so that you are viewing the tangent plane “edge on”. (This will also make errors in your computation of the tangent plane easier to detect visually). Turn in a hard copy of your plot along with the Maple command used to generate it. Mark (by hand) the point P of tangency on the surface.

4. Write your name on this page in the space provided at the top, and use this page as a cover sheet for your assignment.