Math 3113 - Multivariable Calculus

Homework #3 - 2006.02.13

Due Date - 2006.02.20

Solutions

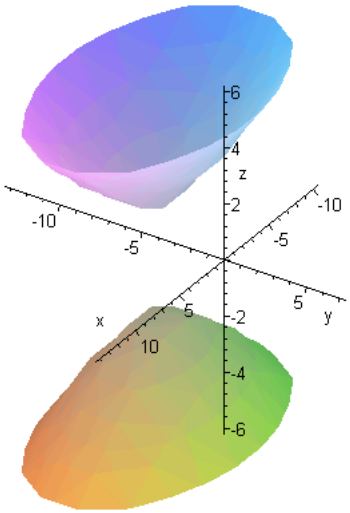
Graphs the following functions.

1.

$$z^2 = 14 + y^2 + 6y + \frac{1}{4}x^2 - x$$

Factoring, one gets:

$$z^2 = 4 + (y+3)^2 + \frac{1}{4}(x-2)^2$$

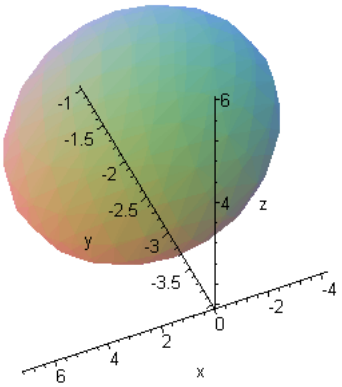


2.

$$\frac{1}{4}z^2 - 2z + \frac{326}{25} + y^2 + 6y + \frac{1}{25}x^2 - \frac{2}{25}x = 1$$

Factoring, one gets:

$$\frac{1}{4}(z-4)^2 + (y+3)^2 + \frac{1}{25}(x-1)^2 = 1$$



3.

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

Notice that along line $x + y = c$, $\sin(x + y) = \sin(c)$ which is a constant. Thus, one graphs the function as slices parallel to the line $y = -x$.