MAT 16C: Quiz 1 - Practice
Friday, June 24

Write legibly and neatly. Show all your work for full credit.

1. (10 points)

Use an integrating factor to find the general solution to the differential equation:

\[(x - 1)y' + y = x^2 - 1\]
2. (5 points) Find the center and the radius of the sphere given by the equation:

\[ x^2 + y^2 + z^2 - 4y + 6z + 4 = 0 \]
3. **(10 points)** Let $S$ be the surface given by the equation:

$$4x^2 - y^2 + 4z^2 = 16$$

a. (2pts) Find the xy-trace and classify it as a parabola, hyperbola, or ellipse.

b. (2pts) Find the xz-trace and classify it as a parabola, hyperbola, or ellipse.

c. (2pts) Find the yz-trace and classify it as a parabola, hyperbola, or ellipse.

d. (4pts) Write the equation for in its normal form, and classify it as one of the six types of quadratic surfaces we learned about in class.