

**Math 53 (Multivariable Calculus), Section 102 & 108**

**Week 5, Friday**

**Sep 23, 2022**

**For the other materials: [seewoo5.github.io/teaching/2022Fall](https://seewoo5.github.io/teaching/2022Fall)**

---

1. Show that the curve with parametric equations  $x = t \cos t, y = t \sin t, z = t^2$  lies on the elliptic paraboloid  $x^2 + y^2 = z$ , and use this fact to sketch the curve.
2. Show that the curve with parametric equations  $x(t) = t^2 - 1, y(t) = -t + 1, z(t) = -t^2 + t + 1$  lies on a plane. Find an equation of the plane.
3. Find a vector function that represents the curve of intersection of the hyperboloid  $z = x^2 - y^2$  and the cylinder  $x^2 + y^2 = 1$ .