

### Calculus III Workshop questions: 8/31/16

**Problem 1** (12.5, #45). Find the point at which the line  $x = 3 - t$ ,  $y = 2 + t$ ,  $z = 5t$  intersects the plane  $x - y + 2z = 9$ .

**Problem 2** (12.5, #57). Find parametric equations for the line of intersection of the planes  $x + y + z = 1$  and  $x + 2y + 2z = 1$  and find the angle between them.

**Problem 3** (12.6, #3). Describe and sketch the surface  $x^2 + z^2 = 1$ .

**Problem 4** (12.6, #44). Find an equation for the surface obtained by rotating the line  $x = 3y$  about the  $x$ -axis.

**Problem 5** (13.2, #27). Find a vector equation for the tangent line to the curve of intersection of the cylinders  $x^2 + y^2 = 25$  and  $y^2 + z^2 = 20$  at the point  $(3, 4, 2)$ .