

Name:

Roll Number:

Section: \_\_\_\_

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**Problem 1.** Let  $f : \mathbb{R}^3 \rightarrow \mathbb{R}$ , define  $f(x, y, z) = x^2 + y^2 + z = 16$ . Find the tangent plane to the surface  $f$  at the point  $(1, 3, 6)$ .

**Problem 2.** Find the area between the curves  $y = x^2$  and  $x = y$  in the Cartesian coordinates.

(You can start answering from here)