Worksheet 3 / 15 points

Name: Section: 2 4 (circle one)

1. Find the distance between the point $(1, 3, 5)$ and the plane $x - y - z = 1$.

2. Given the parametric equations $x = \cos^2(t)$ and $y = \sin^2(t)$, find an equation for the tangent line when $t = \frac{\pi}{4}$.

3. Find the length of the curve given by $x = \dfrac{y^4}{4} + \dfrac{1}{8y^2}$ from $y = 1$ to $y = 2$.

4. Graph $r = 4\cos(\theta)$ in polar coordinates. Give the equation of the tangent line when $\theta = \frac{\pi}{6}$.

5. Find the area between the curves $r_2 = 1 - \cos(\theta)$ and $r_1 = 2$.

6. Find the length of the spiral $r = \theta^2$ from $0 \leq \theta \leq \sqrt{12}$.