

MATH 2415 Test 2

Name: _____

1. For the curve with position vector $\mathbf{r} = \langle t^3, t^2, t^9 \rangle$ at time t , find the osculating plane at $t = 1$. (Hint: this plane is perpendicular to $\mathbf{r}' \times \mathbf{r}''$.)

2. Which term best describes the surface $\{(x, y, z) \mid \rho \geq 0 \text{ and } \phi = \pi/3\}$?
cone? double-cone? plane? half-plane? circular cylinder? spiral cylinder? sphere?

3. Parametrize the straight-line, constant-speed path from $(2, 4, 2)$ at time $t = 0$ to $(7, 6, 5)$ at time $t = 1$. What is the position vector when $t = 2/3$?