

$$1. \vec{r}(u, v) = (u^2 \cos v) \vec{i} + (u^2 \sin v) \vec{j} + (2u) \vec{k}$$

$$(t, u) = \underbrace{(t^2 \cos u)}_{x(t, u)} \vec{i} + \underbrace{(t^2 \sin u)}_{y(t, u)} \vec{j} + \underbrace{(2t)}_{z(t, u)} \vec{k}$$

$$2. \vec{r}(u, v) = \underbrace{u}_{x=u} \vec{i} + \underbrace{v}_{y=v} \vec{j} + \underbrace{\left(\frac{v}{6}\right)}_{z=\frac{v}{6}} \vec{k}$$

so  $z = \frac{y}{6}$  PLANE

$$3. \vec{r}(u, v) = \underbrace{(9 \cos v \cos u)}_x \vec{i} + \underbrace{(9 \cos v \sin u)}_y \vec{j} + \underbrace{(6 \sin v)}_z \vec{k}$$

$$x = 9 \cos v \cos u \quad y = 9 \cos v \sin u \quad z = 6 \sin v$$

$$\textcircled{1} \frac{x}{9} = \cos v \cos u \quad \frac{y}{9} = \cos v \sin u \quad \frac{z}{6} = \sin v$$

$$\frac{x^2}{81} = \cos^2 v \cos^2 u \quad \frac{y^2}{81} = \cos^2 v \sin^2 u \quad \frac{z^2}{36} = \sin^2 v$$

$$\textcircled{2} \frac{x^2}{81} + \frac{y^2}{81} + \frac{z^2}{36} = \cos^2 v \cos^2 u + \cos^2 v \sin^2 u + \sin^2 v$$

$$\frac{x^2}{81} + \frac{y^2}{81} + \frac{z^2}{36} = \cos^2 v (\cos^2 u + \sin^2 u) + \sin^2 v$$

$$\frac{x^2}{81} + \frac{y^2}{81} + \frac{z^2}{36} = \cos^2 v + \sin^2 v$$

$$\frac{x^2}{81} + \frac{y^2}{81} + \frac{z^2}{36} = 1$$

