

$$13. \quad x^2 + y^2 + z^2 = 10 \quad x + z = 4 \quad x = 2 + \sin(t)$$

$$(2 + \sin t)^2 + y^2 + (2 - \sin t)^2 = 10 \quad 2 + \sin t + z = 4$$

$$z = 4 - 2 - \sin t$$

$$z = 2 - \sin(t)$$



$$4 + 4\sin t + \sin^2 t + y^2 + 4 - 4\sin t + \sin^2 t = 10$$

$$8 + 2\sin^2 t + y^2 = 10$$

$$y^2 = 10 - 8 - 2\sin^2 t$$

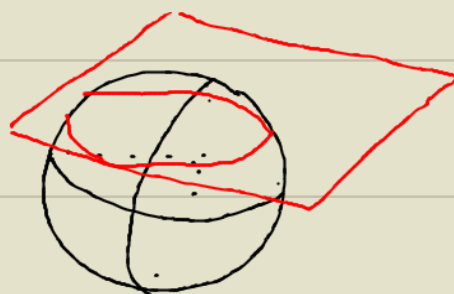
$$y^2 = 2 - 2\sin^2 t$$

$$y^2 = 2(1 - \sin^2 t)$$

$$y^2 = 2\cos^2 t$$

$$y = \sqrt{2\cos^2 t}$$

$$y = \sqrt{2}\cos t$$



$$x = 2 + \sin t \quad y = \sqrt{2}\cos t \quad z = 2 - \sin t$$

$$\vec{r}(t) = (2 + \sin t)\vec{i} + (\sqrt{2}\cos t)\vec{j} + (2 - \sin t)\vec{k}$$

$$14. \quad \lim_{t \rightarrow \pi} (\sec(t)\vec{i} + \tan(t)\vec{j} - t^2\vec{k})$$

$$= \sec \pi \vec{i} + \tan \pi \vec{j} - \pi^2 \vec{k}$$

$$= -\vec{i} - \pi^2 \vec{k}$$

