1) Consider the parametrized curve in $\mathbb{R}^3$

$$\gamma(t) = (e^t \sin t, e^t \cos t, \sqrt{2}e^t),$$

with $0 \leq t \leq 2\pi$. Reparametrize it with respect to arclength.

There is another problem overleaf.
2) Consider the parametrized curve in $\mathbb{R}^3$

$$\gamma(t) = (3 + 3 \cos t, 2 + 2 \sin t, 6 + 6 \cos t + 6 \sin t), \quad 0 \leq t \leq 2\pi.$$ 

(a) Find its curvature $\kappa(t)$ and torsion $\tau(t)$

(b) What can you conclude about the curve $\gamma$?

Recall here that in general we have

$$\kappa(t) = \frac{\|\gamma'(t) \times \gamma''(t)\|}{\|\gamma'(t)\|^3}, \quad \tau(t) = \frac{(\gamma'(t) \times \gamma''(t)) \cdot \gamma'''(t)}{\|\gamma'(t) \times \gamma''(t)\|^2}$$