

1. Given parametric equations find equation in the form $F(x, y) = 0$ and sketch the curve. Do you know its name?
 - (a) $x = \sec t, y = \tan t, -\pi/2 < t < \pi/2$
 - (b) $x = e^t, y = 1 - e^{-t}, -\ln 2 \leq t \leq \ln 2$
 - (c) $x = 2 \cos t, y = 3 \sin t, -\pi < t < \pi$
 - (d) $x = 2 \cos(2t), y = 2 \sin(2t), -\pi/2 < t < \pi/2$
2. For each curve from the previous problem find and sketch tangent vector at $t = 0$.
3. Sketch 3D curve and find tangent vector at each time t .
 - (a) $x = \cos(2t), y = 1, z = 2, -\pi/2 < t < \pi/2$
 - (b) $x = \cos(2t), y = 3, z = \sin(2t), -\pi/2 < t < \pi/2$
 - (c) $x = \cos(2t), y = t, z = \sin(2t), -\pi/2 < t < \pi/2$
4. Find parametric equations for the sides of the triangle with vertices at points $(1, 2, 3), (-1, 5, 6), (0, 5, 1)$.
5. Find parametric equations for the curve of intersection of cylinder $x^2 + y^2 = 4$ and $z = xy$. Can you imagine and sketch the curve? Please!
6. Find vector position vector $\vec{r}(t)$ if the velocity vector is given by
 - (a) $\frac{4}{1+t^2}\mathbf{i} + \frac{2t}{1+t^2}\mathbf{j} + \frac{t^2}{1+t^2}\mathbf{k}$
 - (b) $e^{2t}\mathbf{i} + \ln t\mathbf{j} + \sec^2 t\mathbf{k}$