

Parametric Equation Practice

Tangent Lines and Horizontal/Vertical Tangents

Find tangent line of the parametric equations

1. $x = 2t$ $y = 3t - 1$ $t = 3$ 2. $x = \sqrt{t}$ $y = 3t - 1$ $t = 1$

3. $x = t + 1$ $y = t^2 + 3t$ $t = -1$ 4. $x = t^2 + 3t + 2$ $y = 2t$ $t = 0$

5. $x = 2\cos\theta$ $y = 2\sin\theta$ $\theta = \frac{\pi}{4}$ 6. $x = 2 + \sec\theta$ $y = 1 + \tan\theta$ $\theta = \frac{\pi}{6}$

7. $x = \cos\theta$ $y = 3\sin\theta$ $\theta = 0$ 8. $x = \sqrt{t}$ $y = \sqrt{t-1}$ $t = 2$

Find all points(if any) of horizontal and vertical tangency to the curve. For any trig functions find the points only between $[0, 2\pi]$

1. $x = t^4 + 1, y = t^3 + t$ 2. $x = 2t^2 + 1, y = \frac{1}{3}t^3 - t$

3. $x = 2\sin t, y = 3\cos t$ 5. $x = 10t^2, y = t^3 - 12t$

8. $x = 4 + t^2, y = t^2 + t^3$ 9. $x = t - e^t, y = t + e^{-t}$

A curve C is defined by the parametric equations $x = t^2 - 2t$ and $y = t^2$. Determine the equation of the line tangent to the graph of C at the point $(3, 9)$?

Find all points(if any) of horizontal and vertical tangency to the curve. For any trig functions find the points only between $[0, 2\pi]$

1. $x = 1 - t$ $y = t^2$ 2. $x = t + 1$ $y = t^2 + 3t$

3. $x = 1 - t$ $y = t^3 - 3t$ 4. $x = t^2 - t + 2$ $y = t^3 - 3t$

5. $x = 3\cos\theta$ $y = 3\sin\theta$ 7. $x = 4 + 2\cos\theta$ $y = -1 + \sin\theta$

Find tangent line of the parametric equations

1. $x = t^2 - 2$ $y = t^3 - t$ $t = 1$ 2. $x = t^3 - t$ $y = t^4 - 5t^2 + 4$ $t = -1$

3. $x = (t^2 + 1)^2$ $y = t^4 - 1$ $t = 2$ 4. $x = \sqrt{t^2 + 5}$ $y = t^3 - t$ $t = -1$

5. $x = t^2 - 2t$ $y = t^2 - t - 4$ $t = 3$ 6. $x = 4t - t^2$ $y = t^3 - 2t^2$ $t = 1$