Parametric Equation Practice

Tangent Lines and Horizontal/Vertical Tangents

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. $x = t^4 + 1,\ y = t^3 + t$

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. $x = t - e^t,\ y = t + e^{-t}$

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. $x = 1 - t \quad y = t^2$

2. $x = t + 1 \quad y = t^2 + 3t$

3. $x = 1 - t \quad y = t^3 - 3t$

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

5. $x = 3\cos\theta \quad y = 3\sin\theta$

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

Find tangent line of the parametric equations

1. $x = 2t \quad y = 3t - 1 \quad t = 3$

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

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

4. $x = t^2 + 3t + 2 \quad y = 2t \quad t = 0$

5. $x = 2\cos\theta \quad y = 2\sin\theta \quad \theta = \frac{\pi}{4}$

6. $x = 2 + sec\theta \quad y = 1 + tan\theta \quad \theta = \frac{\pi}{6}$

7. $x = \cos\theta \quad y = 3\sin\theta \quad \theta = 0$

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

Find tangent line of the parametric equations

1. $x = t^2 - 2 \quad y = t^3 - t \quad t = 1$

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

3. $x = (t^2 + 1)^2 \quad y = t^4 - 1 \quad t = 2$

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

5. $x = t^2 - 2t \quad y = t^2 - t - 4 \quad t = 3$

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