MAT 137 (Calculus II) Prof. Swift

Parametric Curves in the Plane, Part 2

1. Eliminate the parameter to get an equation in terms of x and y for the parabola with parametric description $x = 1+t^2$, $y = 3+t$. Write your answer in the form $x = Ay^2+By+C$.

2. Eliminate the parameter to get an equation in terms of x and y for the ellipse with parametric description $x = 3\cos(t)$, $y = 2\sin(t)$. Hint: $\sin^2(t) + \cos^2(t) = 1$ for all t.

3. The parametric equations $x = \sin(t) + \cos(t)$, $y = \sin(t)$, $0 \leq t \leq 2\pi$ trace out an ellipse. Find the points on this ellipse where the tangent line is horizontal. (Hint: The vertical velocity is zero when the curve has a horizontal tangent, so start by solving $\frac{dy}{dt} = 0$ for t.)