1. The curve given by the implicit equation $x^3 + y^3 = 6xy$ is called the folium of Descartes.
   a) Find an expression for the slope of the line tangent to this curve at the point $(x,y)$.
   b) Write an equation for the line tangent to this curve at the point $(3,3)$.
   c) Find the coordinates of all points on the curve where the tangent line is horizontal.
   d) Find the coordinates of all points on the curve where the tangent line is vertical.

2. Consider the curve given by the implicit equation $x^2 + xy + y^2 = 1$.
   a) Find an expression for the slope of the line tangent to this curve at the point $(x,y)$.
   b) Write an expression for the line tangent to this curve at the point $(1,-1)$.
   c) Find the coordinates of all points on the curve where the tangent line is horizontal.
   d) Find the coordinates of all points on the curve where the tangent line is vertical.

3. Consider the curve given by the parametric equations $x(t) = 2t^2 - t$, $y(t) = 3t^3 - t$.
   a) When $t = 2$, what are the coordinates of the corresponding point?
   b) Find the coordinates of all points where the curve crosses the $x$-axis.
   c) Find an expression for the slope of the line tangent to this curve at time $t$.
   d) Find the coordinates of all points on the curve where the tangent line is vertical.

4. Curves with parametric equations of the form $x(t) = a \cos(t)$, $y(t) = a \sin(t)$, for various values of the constant $a$, have a familiar shape.
   a) What role does the value of $a$ play?
   b) Which values of $t$ correspond to the portion of such a curve which lies in the first quadrant?
   c) Find an expression for the slope of the line tangent to this curve at time $t$. 