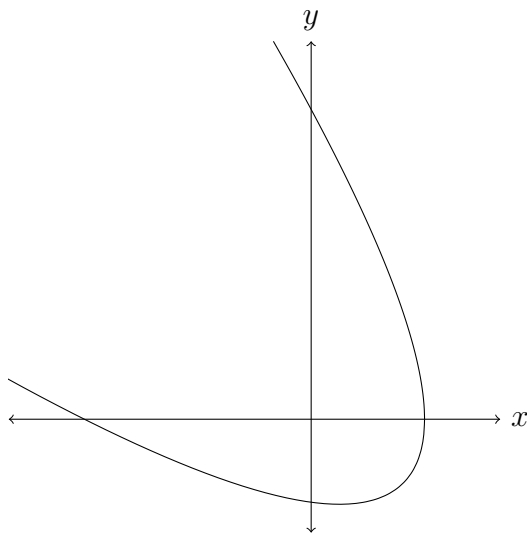

Calculus with Parametric Curves

Solutions should show all of your work, not just a single final answer.

1. Pictured below is the parametric curve $(x, y) = (3 - t^2, t^2 + 3t)$. It is a rotated parabola.



- (a) Mark the orientation on the curve (direction of increasing values of t).
 - (b) Determine dy/dx in terms of the parameter t .
 - (c) Find the slope of the tangent line at the point on the curve where it crosses the positive y -axis.
 - (d) Find the point (x, y) on the curve where the tangent line is horizontal. (First, as a reality check, see which quadrant your answer should be in.)
2. T/F (with justification)
- On the parametric curve $(x, y) = (t^2 - 2t, t^3 - 3)$ the graph is increasing at the point where $t = 1/2$.