

Math 111  
Chapter 10.2: Derivatives of Parametric Curves

If  $x$  and  $y$  are functions of  $t$  and we want to know how  $y$  changes with respect to  $x$ , we need the **Chain Rule**

Again, we can find the **concavity** of the curve by finding  $\frac{d^2y}{dx^2}$ .

(EXAMPLES)

1. 
$$\begin{cases} x = t^2 \\ y = t^3 - 3t \end{cases}$$

$$2. \quad \begin{cases} x = 1 + \sqrt{t} \\ y = e^{t^2} \end{cases}$$

$$3. \quad \begin{cases} x = t - \ln t \\ y = t + \ln t \end{cases}$$