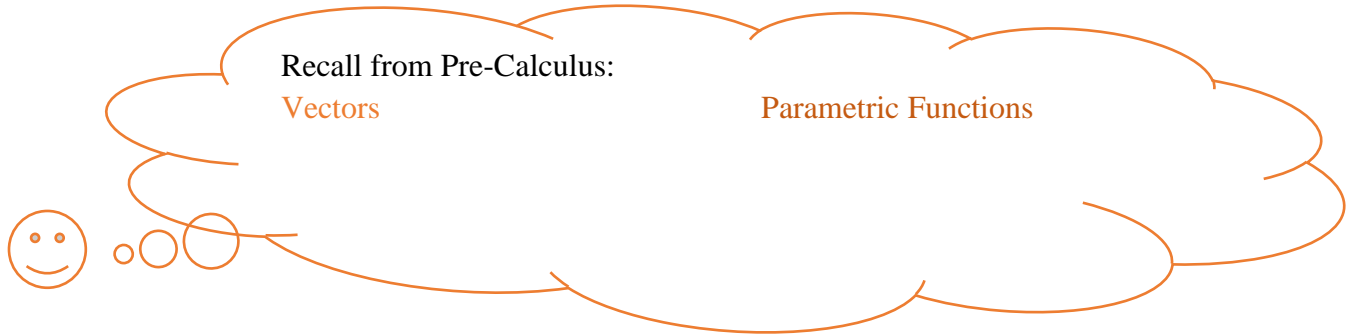


## 10.1 & 10.2 Derivatives of Vectors and Parametric Functions



### **Position**

Vectors

Parametric Functions

### **Velocity**

Vectors

Parametric Functions

### **Acceleration**

Vectors

Parametric Functions

### **Speed**

Vectors

Parametric Functions

## Slopes of Parametric Curves

### Parametric Functions

Slope of a curve (slope of a tangent line):

*Example:*

Write the equation of the tangent line at  $t = 4$  given the parametric function defined by

$$x(t) = \sqrt{t} - t \text{ and } y(t) = \frac{32}{t}.$$

$$\frac{d^2y}{dx^2}$$

*Example:*

Find  $\left. \frac{d^2y}{dx^2} \right|_{t=1}$  given the parametric function defined by  $x(t) = t^3$  and  $y(t) = t^2 + 2t$ .