

When the cubic has a MAXIMUM the 2<sup>nd</sup> derivative is a NEGATIVE number.

When the cubic has a MINIMUM the 2<sup>nd</sup> derivative is a POSITIVE number.

When the cubic has an INFLECTION point the 2<sup>nd</sup> derivative is ZERO. Consider the curve  $y = x^2(6 - x) = 6x^2 - x^3$ 

$$\frac{dy}{dx} = 12x - 3x^{2}$$
$$= 3x(4 - x) = 0 \text{ at max/min}$$
So  $x = 0 \text{ or } 4$ 

 $\frac{d^2y}{dx^2} = 12 - 6x$ 

## 2<sup>nd</sup> derivative test : (to determine which is a MAX and which is a MIN)

