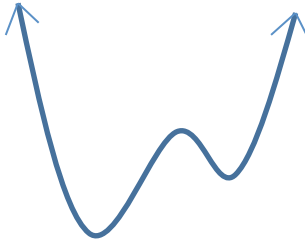
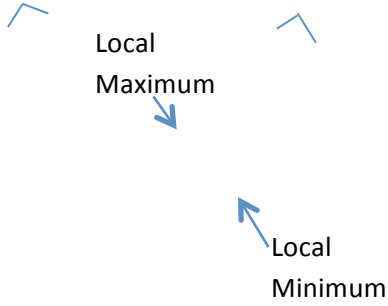
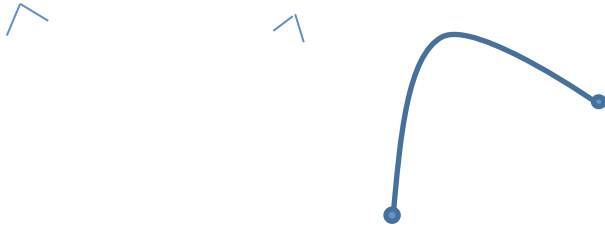
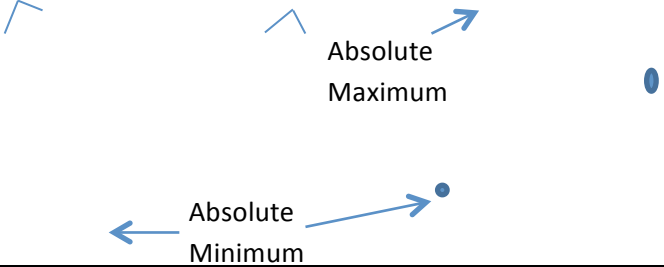


Notecards Application of Derivatives

<p>1</p>	<p>What are local minimums or maximum? What are local extrema?</p> 	<p>When a function changes direction.</p> 
<p>2</p>	<p>What are absolute minimums or maximums? What are absolute extrema?</p> 	<p>The absolute largest/smallest y -value on graph. These can happen when a graph changes directions They can also happen at endpoints.</p> 
<p>3</p>	<p>How do you find critical numbers?</p>	<p>You find the derivative of a function and set it equal to zero and solve for x.</p> <p>If the derivative is a fraction you set the top and bottom equal to zero and solve for x.</p>
<p>4</p>	<p>Rolle's Theorem</p>	<p>Assume that $f(x)$ is continuous and differentiable on the entire interval from $[a, b]$. If $f(a) = f(b)$ Then there exists a number c between a and b such that $f'(c) = 0$. What does this mean????? If two x -values have the same y -value then there is a max/min somewhere inbetween.</p>
<p>5</p>	<p>Mean Value Theorem</p>	<p>Assume that $f(x)$ is continuous and differentiable on the entire interval from $[a, b]$.</p> <p>Then somewhere the instantaneous rate of change is equal to the average rate of change.</p> $f'(c) = \frac{f(b) - f(a)}{b - a}$ <p>Set these equal to each other and solve for x.</p>
<p>6</p>	<p>How does the sign of the derivative relate to the original function?</p>	<p>If $f'(x) > 0$ Then $f(x)$ is increasing.</p> <p>If $f'(x) < 0$ Then $f(x)$ is decreasing.</p>

7	How does the sign of the second derivative relate to the original function?	<p>If $f''(x) > 0$ Then $f(x)$ is concave up.</p> <p>If $f''(x) < 0$ Then $f(x)$ is concave down.</p>
8	What is the First Derivative Test?	<p>If $f'(x) = 0$ and If $f'(x)$ changes from positive to negative Then $x = \textit{maximum}$</p> <p>If $f'(x) = 0$ and If $f'(x)$ changes from negative to positive Then $x = \textit{minimum}$</p>
9	How do you find points of inflection?	<p>If $f''(x) = 0$ and if $f''(x)$ changes signs at that x-value Then that x - is a point of inflection</p>
10	What is the Second Derivative Test?	<p>If $f'(x) = 0$ and If $f''(x) < 0$ Then $x = \textit{maximum}$</p> <p>If $f'(x) = 0$ and If $f''(x) > 0$ Then $x = \textit{minimum}$</p>