## **Derivative Information Chart**

If we know:	Then we know the following about:				
	the graph of f	the function f ' and the f ' graph	the function f '' and f '' graph		
	The <i>f</i> graph is:				
<i>f</i> > 0 on					
interval (a,b)					
	The <i>f</i> graph is:				
<i>f</i> < 0 on					
interval (a,b)					
	(what happens to the <i>f</i> graph?)				
f = 0 at x = a					
	If $a < x_1 < x_2 < b$ , then:				
f is increasing					
on interval					
(a,b)					
	If $a < x_1 < x_2 < b$ , then:				
f is					
decreasing on					
interval (a,b)					
	the f graph locally looks like:				
f has an					
extreme point					
at <i>x</i> = a					
	the tangent lines for the <i>f</i> graph lie:				
f is concave					
up on interval					
(a,b)					
	the tangent lines for the <i>f</i> graph lie:				
f is concave					
down on					
interval (a,b)					
	the tangent line for the $f$ graph at $x = a$ does				
f has an	what?				
inflection point					
at <i>x</i> = a					

## **Derivative Information Chart**

If we know:	Then we know the following about:		
	the funtion f and the f graph	the f ' graph	the function f " and f " graph
		The f ' graph is:	
f'>0 on			
interval (a,b)			
		The <i>f</i> ' graph is:	
<i>f</i> ' < 0 on			
interval (a,b)			
		(what happens to the f ' graph?)	
( ) ) , ( )			
f' = 0 at x = a			
		If $a < x_1 < x_2 < b$ , then:	
f' is increasing on			
interval (a,b)			
		If $a < x_1 < x_2 < b$ , then:	
f' is decreasing on			
interval (a,b)			
61 haa am		the f ' graph locally looks like:	
f' has an extreme point			
at x = a			
f' is concave		the tangent lines for the <i>f</i> ' graph lie:	
up on interval			
(a,b)			
f' is concave		the tangent lines for the <i>f</i> ' graph lie:	
down on			
interval (a,b)			
f' has an		the tangent line for the f ' graph at x = a does what?	
inflection point		Wildl	
at <i>x</i> = a			

## **Derivative Information Chart**

If we know:	Then we know the following about:			
	the funtion f and the f graph	the function f ' and the f ' graph	the f '' graph	
f '' > 0 on interval (a,b)			The <i>f</i> " graph is:	
f '' < 0 on interval (a,b)			The f " graph is:	
f'' = 0 at x = a			(what happens to the <i>f</i> " graph?)	
f'' is increasing on			If $a < x_1 < x_2 < b$ , then:	
interval (a,b) f '' is decreasing on interval (a,b)			If $a < x_1 < x_2 < b$ , then:	
f '' has an extreme point at x = a			the f '' graph locally looks like:	
f'' is concave up on interval (a,b)			the tangent lines for the <i>f</i> ' graph lie:	
f'' is concave down on interval (a,b)			the tangent lines for the <i>f</i> " graph lie:	
f '' has an inflection point at x = a			the tangent line for the <i>f</i> " graph at <i>x</i> = a does what?	