Calculus Section 3.6 A Summary of Curve Sketching

-Determine the important values to find and use while analyzing a graph and its derivatives.

**Describe how the function f(x) behaves from the graphs of f(x), f ‘(x), and f ‘’(x).**

**Graph of f(x)**Increasing/decreasing: Where the graph is going up/down  
Relative max/min: The top of a hill or bottom of a valley  
Critical points: Relative max/mins, sharp turns, vertical tangents  
Concave up/down: Where the graph is cupped up/down  
Point of inflection: Where the concavity changes  
  
**Graph of f ‘(x)**  
Increasing/decreasing: Where the graph is positive/negative  
Relative max/min: Where the graph changes from positive to negative (or vice versa)  
Critical points: Where the graph crosses the x-axis, or where the graph does not exist  
Concave up/down: Where the graph is increasing/decreasing  
Point of inflection: The top of a hill or bottom of a valley (Rel max/min of f ‘(x))

**Graph of f ‘’(x)**  
Concave up/down: Where the graph is positive/negative  
Point of inflection: Where the graph crosses the x-axis

The graph of a function f(x) is given. For f(x), what are the critical points, intervals of increasing/decreasing, what are its relative maximums/minimums, its points of inflection, and where is it concave up/down?

Critical points:  
Increasing:  
Decreasing:  
Rel. max:  
Rel. min:  
Points of Inflection:  
Concave up:  
Concave down:

The graph of a derivative function is given. For g(x), what are the critical points, intervals of increasing/decreasing, what are its relative maximums/minimums, its points of inflection, and where is it concave up/down?

Critical points:  
Increasing:  
Decreasing:  
Rel. max:  
Rel. min:  
Points of Inflection:  
Concave up:  
Concave down:

The graph of the 2nd derivative h*’’(x)* is given. For h(x), identify points of inflection and where the graph is concave up/down.

Points of Inflection:  
Concave up:  
Concave down: