Higher order derivatives and graphs

After completing this section, students should be able to do the following.

- Use the first derivative to determine whether a function is increasing or decreasing.
- Define higher order derivatives.
- Compare differing notations for higher order derivatives.
- Identify the relationships between the function and its first and second derivatives.
- Sketch a graph of the second derivative, given the original function.
- Sketch a graph of the original function, given the graph of its first and second derivatives.
- Sketch a graph of a function satisfying certain constraints on its higher-order derivatives.
- State the relationship between concavity and the second derivative.
- Interpret the second derivative of a position function as acceleration.
- Calculate higher order derivatives.

Learning outcomes: