1. Consider a continuous real function $f(x)$, discretized on a uniform mesh of points $x_j = jh$, where $j = 0, 1, 2, .....$ Consider the forward difference formula for $f'(x)$ and write it in a Taylor Table (compact form). Identify its order of accuracy.

2. Consider a continuous real function $f(x)$, discretized on a uniform mesh of points $x_j = jh$, where $j = 0, 1, 2, .....$ Consider centered difference formula for $f'(x)$ at point $x_j$ and write it in a Taylor Table. Identify order of accuracy.

3. Taylor Table for a general 3 point finite difference scheme. Consider a continuous real function $f(x)$, discretized on a uniform mesh of points $x_j = jh$, where $j = 0, 1, 2, .....$ Find a finite difference formula for $f'(x)$ that uses the function values at three points $x_j$, $x_{j-1}$ and $x_{j-2}$. Find its order of accuracy. Use Taylor Table.

4. Taylor Table for a general finite difference scheme for second derivative. Consider a continuous real function $f(x)$, discretized on a uniform mesh of points $x_j = jh$, where $j = 0, 1, 2, .....$ Find a finite difference formula for $f''(x)$ with the highest accuracy possible and which uses the function values at three points $x_j$, $x_{j-1}$ and $x_{j+1}$. Find its order of accuracy. Use Taylor Table.