Taylor's Theorem: Let f be an $(n+1)$ times differentiable function on an open interval containing the points a and x. Then

$$f(x) = f(a) + f'(a)(x-a) + \frac{f''(a)}{2!}(x-a)^2 + \cdots \ldots + \frac{f^{(n)}(a)}{n!}(x-a)^n + R_n(x)$$

where $R_n(x) = \frac{f^{(n+1)}(c)}{(n+1)!}(x-a)^{n+1}$ for some number $c \in (a, x)$.

Maclaurin's Theorem: If we put $a = 0$ in Taylor's theorem, then we find

$$f(x) = f(0) + f'(0)x + \frac{f''(0)}{2!}x^2 + \cdots \ldots + \frac{f^{(n)}(0)}{n!}x^n + R_n(x)$$

where $R_n(x) = \frac{f^{(n+1)}(c)}{(n+1)!}x^{n+1}$ for some number $c \in (0, x)$.