

BC CalcLog 5.3

Let f be a function with derivatives of all orders for which $f(2) = 7$. When n is odd, the n th derivative of f at $x = 2$ is 0. When n is even and $n \geq 2$, the n th derivative of f at $x = 2$ is given by $f^{(n)}(2) = \frac{(n-1)!}{3^n}$.

- (a) Write the six-degree Taylor polynomial for f about $x = 2$.
- (b) In the Taylor series for f about $x = 2$, what is the coefficient of $(x - 2)^{2n}$ for $n \geq 1$?
- (c) Find the interval of convergence of the Taylor series for f about $x = 2$. Show the work that leads to your answer.