

Name _____

1. (2 points) A function $f(x)$ and its derivatives have the following values at $x = 0$.

$$f(0) = 5, f'(0) = -7, f''(0) = 6, f'''(0) = 12$$

What is the 3rd Maclaurin polynomial for $f(x)$?

2. (2 points) Find the 4th Taylor polynomial for $f(x) = \frac{1}{x}$ about $x = 1$.

3. (6 points) Find the interval of convergence for the following power series. You must thoroughly justify your claim.

(a) $1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \frac{x^8}{8!} + \cdots$

(b) $\sum_{k=0}^{\infty} \frac{(x-5)^k}{k+2}$