

Name: _____ ID #: _____

NO CALCULATORS

1. [20 points] Find the interval of convergence of $\sum_{n=0}^{\infty} 4^n \frac{(x-3)^{2n}}{n!}$.
2. [20 points] Find the interval of convergence of $\sum_{n=2}^{\infty} \frac{3x^n}{\ln n}$.
3. [20 points] Find the Taylor series of $\sin^2 x$, centered about 0. Express your answer in Σ notation. What is its radius of convergence? Hint: Use a trig identity to convert the $\sin^2 x$.

4. [20 points] Find a power series for $\frac{1}{2+3x}$, centered about 0. Express your answer in Σ notation. What is its radius of convergence?

5. [20 points] Find the first four terms of the Taylor series of $\frac{1}{\sqrt{2+3x}}$, centered about 0.