Assignment 3

1. Find the nth Maclaurin polynomial for the function.

$$f(x) = \frac{1}{1-x} \quad , \quad n = 5$$

2. Find the nth Taylor polynomial for the function, centered at c.

$$f(x) = x^2 \cos x \quad , \quad n = 2 \quad , \quad c = \pi$$

3. Find the interval of convergence of the power series.

$$\sum_{n=0}^{\infty} \frac{(x-3)^{n+1}}{(n+1)4^{n+1}}$$

4. Use the power series $\dfrac{1}{1+x} = \displaystyle\sum_{n=0}^{\infty}(-1)^n x^n \quad , \quad |x| < 1$ to find a power series for the function, centered at 0, and determine the interval of convergence.

$$f(x) = \ln(x^2 + 1)$$

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