

Q1 (4 pts): Find the radius and interval of convergence of the series $\sum_{n=1}^{\infty} \frac{2^n (x-3)^n}{\sqrt{n+3}}$

Q2 (2 pts): Find a power series representation for the function $f(x) = \frac{2}{(1-2x)^2}$

Q3 (3 pts): Evaluate the indefinite integral $\int \frac{x}{4+x^3} dx$ as a power series and determine its radius of convergence.

Q4 (1 pt): Find the sum of the series: $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \dots$
