1. Find a power series representation for each function and determine the interval of

convergence.   a) $f(x) = \dfrac{x}{4 - x^2}$

b) $f(x) = \ln(2 - x)$ c) $f(x) = \dfrac{1}{(1 + x)^2}$

2. Find the Taylor series for f(x) centered at the given value of a. $f(x) = \dfrac{1}{x}$, $a = 2$

3. Find the Maclaurin series of f and its radius of convergence. $f(x) = \sqrt{9 - x}$

4. Evaluate the indefinite integral as an infinite series. $\displaystyle\int \sqrt{x}\, e^{-x}\, dx$