

Worksheet 11.9, 11.10, 11.11

Full Name: _____ Score: _____

1. Find the power series representation for each function f . Include the interval of convergence.

(a) $f(x) = \frac{x^2}{1 - 3x}$

(b) $f(x) = \frac{8}{4 + 7x}$

(c) $f(x) = \frac{1}{(1 - x^2)^2}$

(d) $f(x) = \ln|2 + 3x|$

(e) $f(x) = xe^{-3x}$

(f) $f(x) = \cos(4x)$

(g) $f(x) = 4 \sin(x^2)$

2. Find the degree 3 Taylor polynomial centered at $a = 2$ for the function given by $f(x) = 2x^3 - 7x + 12$. Then multiply out and simplify your answer. Does the result surprise you?

3. Find the degree 0, degree 1, degree 2, degree 3, and degree 4 Taylor polynomials centered at $a = 9$ for the function given by $f(x) = \sqrt{x}$. Use each of these to get successively better approximations for $\sqrt{10}$.