

(11.10 & 11.11) Taylor Series & Taylor Polynomials

Full Name: _____

1. Find the power series representation for each function f .

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

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

2. 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 $\sqrt{10}$.

3. A car is moving with speed 20 m/s and acceleration 2 m/s^2 at a given instant. Using a second-degree Taylor polynomial, estimate how far the car moves in the next second. Would it be reasonable to use this polynomial to estimate the distance traveled during the next minute?