

IVA'S CALCULUS I: Homework based on Monday 3/10 and Tuesday 3/11 lectures

Purpose

The main purpose of this assignment is to have you practice working with THE HIGHER ORDER DERIVATIVES.

Due date

Thursday 3/13/2014, by 5pm.

Problems

1. Compute the following higher derivatives.

(a) $\frac{d^3}{dx^3}(7x^3)$

(b) $\frac{d^4}{dx^4}(-(x-1)^3)$

(c) $\frac{d^5}{dx^5}((x+1)^6)$

(d) $\frac{d^3}{dx^3}((1-x)^5)$

(e) $\frac{d^3}{dx^3}\left(\frac{x^3+4x^2-2x+1}{2}\right)$

(f) $\frac{d^4}{dx^4}(\sqrt{x^3})$

(g) $\frac{d^3}{dx^3}(e^{-x^2})$

(h) $\frac{d^3}{dx^3}\left(\frac{x^2+1}{\sqrt{x}}\right)$

(i) $\frac{d^4}{dx^4}(\sin(2x))$

(j) $\frac{d^3}{dx^3}(\arcsin(x))$

(k) $\frac{d^3}{dx^3}(x^2 \ln(x))$

2. Find the third order Taylor approximation of the function $f(x) = e^{-x}$ near $x = 0$.
3. Find the fourth order Taylor approximation of the function $f(x) = \frac{1}{x}$ near $x = 1$.