

Reading Quiz #3

Name: _____ Class: _____ Student I.D. # _____

Read Sections 3.1-3.3(pages 174-196) and work out the following problems.

182.52 Find an equation of the tangent line to the curve $y = x\sqrt{x}$ that is parallel to the line $y = 1 + 3x$.

182.60 Find the n -th derivative of each function by calculating the first few derivatives and observing the pattern that occurs

(a) $f(x) = x^n$

(b) $f(x) = 1/x$

182.62 The equation $y'' + y' - 2y = x^2$ is called a differential equation because it involves an unknown function y and its derivatives y' and y'' . Find constants A, B , and C such that the function $y = Ax^2 + Bx + C$ satisfies this equation.

189.39 If $f(x) = x^2/(1+x)$, find $f''(1)$.

189.40 If $g(x) = x/e^x$, find $g^{(n)}(x)$.

196 Find the given derivative of each function by calculating the first few derivatives and observing the pattern that occurs

196.39 $\frac{d^{99}}{dx^{99}} \sin x$

196.40 $\frac{d^{35}}{dx^{35}}(x \sin x)$

197.41 Find constants A and B such that the function $y = A \sin x + B \cos x$ satisfies the differential equation $y'' + y' - 2y = \sin x$.

197.46 (a) Evaluate $\lim_{x \rightarrow \infty} x \sin \frac{1}{x}$.

(b) Evaluate $\lim_{x \rightarrow 0} x \sin \frac{1}{x}$.