Reading Quiz #6

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

Read Sections 4.2-4.4(pages 262-289) and work out the following problems.

269 Find the absolute maximum and absolute minimum values of f on the given interval.

269.43 $f(x) = 2x^3 - 3x^2 - 12x + 1\,, \qquad [-2, 3]$

269.49 $f(x) = xe^{-x^2/8}\,, \qquad [-1, 4]$

269.52 $f(x) = x - 2\tan^{-1} x\,, \qquad [0, 4]$

280.33 Consider the function $f(x) = \dfrac{x^2}{x^2 - 1}$

(a) Find the vertical and horizontal asymptotes.

(b) Find the intervals of increase or decrease.

(c) Find the local maximum and minimum values

(d) Find the intervals of concavity and the inflection points.

(e) Use the information from parts (a)-(d) to sketch the graph of f.

282.71 (a) If the function $f(x) = x^3 + ax^2 + bx$ has the local minimum value $-\frac{2}{9}\sqrt{3}$ at $x = 1/\sqrt{3}$, what are the values of a and b?

(b) Which of the tangent lines to the curve in part (a) has the smallest slope?

282.72 For what values of c is the function $f(x) = cx + \dfrac{1}{x^2 + 3}$ increasing on $(-\infty, \infty)$?

288.8 Sketch the graph of $f(x) = \dfrac{e^x}{x^2 - 9}$