Reading Quiz #7

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

Read Sections 4.5-4.6(pages 290-306) and work out the following problems.

296 Find the limit.

296.15 $\lim_{x\to 0} \dfrac{\sqrt{1+2x}-\sqrt{1-4x}}{x}$

297.25 $\lim_{x\to 0} \dfrac{\cos x - 1 + \frac{1}{2}x^2}{x^4}$

297.35 $\lim_{x\to \infty} (\sqrt{x^2+x}-x)$

297.45 $\lim_{x\to 0^+} (4x+1)^{\cot x}$

306.13 Optimization

(a) Show that of all the rectangles with a given area, the one with smallest perimeter is a square.

(b) Show that of all the rectangles with a given perimeter, the one with greatest area is a square.

306.15 Find the points on the ellipse $4x^2 + y^2 = 4$ that are farthest away from the point (1,0).

325 Find the limit.

325.32 $\lim_{x \to 0^+} x^2 \ln x$

325.33 $\lim_{x \to 1^+} \left(\frac{x}{x-1} - \frac{1}{\ln x} \right)$

325.34 $\lim_{x \to (\frac{\pi}{2})^-} (\tan x)^{\cos x}$

328.9 If a, b, c, and d are constants such that

$$\lim_{x \to 0} \frac{ax^2 + \sin bx + \sin cx + \sin dx}{3x^2 + 5x^4 + 7x^6}$$

find the value of the sum $a + b + c + d$.