Reading Quiz #8

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

Read Sections 5.1-5.4(pages 332-374) and work out the following problems.

342 Determine a region whose area is equal to the given limit. Do not evaluate the limit.

342.20 $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{2}{n}\left(5+\frac{2i}{n}\right)^{10}$

342.21 $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{\pi}{4n} \tan \frac{i\pi}{4n}$

355 Evaluate the integral by interpreting it in terms of areas.

355.34 $\int_{-2}^{2} \sqrt{4-x^2}\, dx$

355.35 $\int_{-3}^{0} (1+\sqrt{9-x^2})\, dx$

355.38 $\int_{0}^{10} |x-5|\, dx$

355 Express the limit as a definite integral.

355.53 $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{i^4}{n^5}$

355.54 $\lim_{n\to\infty} \frac{1}{n} \sum_{i=1}^{n} \frac{1}{1+(i/n)^2}$

363 Evaluate the integral.

363.13 $\int_0^1 x(\sqrt[3]{x} + \sqrt[4]{x})\, dx$

363.19 $\int_{1/2}^{\sqrt{3}/2} \frac{6}{\sqrt{1-t^2}}\, dt$

364.43 $\int (1-t)(2+t^2)\, dt$

366 Evaluate the limit by first recognizing the sum as a Riemann sum for a function defined on [0,1].

366.75 $\lim_{n\to\infty} \sum_{i=1}^{n} \frac{i^3}{n^4}$

366.76 $\lim_{n\to\infty} \frac{1}{n}\left(\sqrt{\frac{1}{n}} + \sqrt{\frac{2}{n}} + \sqrt{\frac{3}{n}} + \cdots + \sqrt{\frac{n}{n}}\right)$

373.21 If $f(x) = \int_0^x (1-t^2)e^{t^2}\, dt$, on what interval is f increasing?

373.22 If $f(x) = \int_0^{\sin x} \sqrt{1+t^2}\, dt$, and $g(y) = \int_3^y f(x)\, dx$, find $g''(\pi/6)$.

374.31 Find a function f and a number a such that $6 + \int_a^x \frac{f(t)}{t^2}\, dt = 2\sqrt{x}$ for all $x > 0$.