

# Reading Quiz #10

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Student I.D. # \_\_\_\_\_

Read Sections 5.10 and beyond (pages 413-430) and work out the following problems.

421.2 Which of the following integrals is improper? Why?

(a)  $\int_1^2 \frac{1}{2x-1} dx$

(b)  $\int_0^1 \frac{1}{2x-1} dx$

(c)  $\int_{-\infty}^{\infty} \frac{\sin x}{1+x^2} dx$

(d)  $\int_1^2 \ln x - 1 dx$

page 421 Determine whether each integral is convergent or divergent? Evaluate those that are convergent.

421.08  $\int_0^{\infty} \frac{x}{(x^2+2)^2} dx$

421.14  $\int_1^{\infty} \frac{e^{-\sqrt{x}}}{\sqrt{x}} dx$

421.26  $\int_2^3 \frac{1}{\sqrt{3-x}} dx$

421.31  $\int_{-1}^1 \frac{e^x}{e^x-1} dx$

422.50 Find the values of  $p$  for which the integral  $\int_e^\infty \frac{1}{x(\ln x)^p} dx$  converges. Evaluate the integral for those value of  $p$ .

423.64 Find the value of the constant  $C$  for which the integral

$$\int_0^\infty \left( \frac{x}{x^2 + 1} - \frac{C}{3x + 1} \right) dx$$

converges. Evaluate the integral for this value of  $C$ .

426.59 Evaluate the integral  $\int_1^e \frac{dx}{x\sqrt{\ln x}}$  or show that it is divergent.