

Attendance Quiz 8

Name: _____ Date : _____

You have to study ALL Attendance Quizzes and HW problems. We recall topics:

Evaluate the integral.

- Section 7.1: Integration by parts (five types)

$$\int x e^{2x} dx = \frac{1}{2} x e^{2x} - \frac{1}{4} e^{2x} + C$$

$$\int x^2 \cos(3x) dx = \frac{1}{3} x^2 \sin(3x) + \frac{2}{9} x \cos(3x) - \frac{2}{27} \sin(3x) + C$$

$$\int x^2 \ln x dx = \frac{1}{9} t^3 (3 \ln t - 1) + C$$

$$\int x \tan^{-1} x dx = \frac{1}{2} (x^2 \tan^{-1} x + \tan^{-1} x - x) + C$$

$$\int e^{-x} \cos(3x) dx = \frac{1}{10} e^{-x} (3 \sin(3x) - \cos(3x)) + C$$

- Section 7.2: Trigonometric Integrals

$$\int \sin^4 x \cos^3 x dx = \frac{1}{5} \sin^5 x - \frac{1}{7} \sin^7 x + C$$

$$\int_0^{\frac{\pi}{2}} \sin^2(3x) dx = \frac{\pi}{4}$$

$$\int_0^{\frac{\pi}{4}} \tan^4 x \sec^2 x dx = \frac{1}{5}$$

$$\int \tan^3 x \sec^3 x dx = \frac{1}{5} \sec^5 x - \frac{1}{3} \sec^3 x + C$$

- Section 7.3: Trigonometric Substitutions (three types)

$$\int_0^2 x^3 \sqrt{4-x^2} dx = \frac{64}{15}$$

$$\int_0^2 \frac{x^3}{\sqrt{x^2+4}} dx = \frac{8}{3}(2-\sqrt{2})$$

$$\int \frac{1}{x\sqrt{x^2+3}} dx = \frac{1}{128} \left(\sec^{-1} \frac{x}{4} + \frac{4\sqrt{x^2-16}}{x^2} \right) + C$$

- Section 7.4: Integration of Rational Functions by Partial Fractions

$$\int_3^7 \frac{1}{x^2-x-2} dx = \frac{1}{3} \ln\left(\frac{5}{2}\right)$$

$$\int_0^1 \frac{x}{x^2+4x+4} dx = \ln\left(\frac{3}{2}\right) - \frac{1}{3}$$

$$\int \frac{3x^2-6x+2}{2x^3-3x^2+x} dx = 2\ln|x| - \ln|x-1| + \frac{1}{2}\ln|2x-1| + C$$

- Chapter 5: U-substitution

$$\int \frac{x+1}{x^2+2x+4} dx = \frac{1}{2} \ln|x^2+2x+4| + C$$

$$\int x^2 e^{x^3} dx = \frac{1}{3} e^{x^3} + C$$

$$\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx = 2e^{\sqrt{x}} + C$$

$$\int \cos(2x) \sin(2x) dx = \frac{1}{4} \sin^2(2x) + C$$