MA 16100'FALL 2022

DR. HOOD

WARM IIP

$$0 \times -0$$
 $u = 4.0^{2} + 1 = 1$
 $0 \times = 1$ $u = 4.1^{2} + 1 = 5$

Use u-substitution to transform the integral:

$$\int_{0}^{1} (4x^{2} + 1)^{3}x \, dx$$

$$u = 4x^{2} + 1$$

$$du = x dx$$

$$du = 8x dx$$

a)
$$\frac{1}{4} \int_0^1 u^3 du$$

b)
$$4 \int_{1}^{5} u^{3} du$$

a)
$$\frac{1}{4} \int_0^1 u^3 du$$
 b) $4 \int_1^5 u^3 du$ c) $\frac{1}{8} \int_1^5 u^3 du$

ANNOUNCEMENTS

- Dr. Hood's Office Hours in Math 844
 - Mon, Wed: 3:30-4:30pm
 - o Fri: 2:30-3:30pm

- TA's Office Hours in Math Resource Room (WTHR 313)
 - Mon Thu: 9:30am 8:30pm
 - Fri: 9:30am 3:30pm

ANNOUNCEMENTS

- Exam 3 Scores
 - Hope to post most of the scores by 5pm Today,Mon Nov 28

- Final Exam
 - -Tuesday Dec 13 at 8:00 am 10:00 am

POLL 1

What is $\int \sin(2x) dx$?

a)
$$cos(2x) + C$$

$$b) -\frac{1}{2}\cos(2x) + C$$

c)
$$-2\cos(2x) + C$$

$$u = 2x$$

$$du = 2dx$$

$$du = 4x$$

$$\frac{1}{2} \int \sin(u) du$$

$$= \frac{1}{2} \left[-\cos(u) \right] + C$$

$$= -\frac{1}{2} \cos(2\pi) + C$$

POLL 2 -1 du = d2

Which u-substitution is better for:

$$= (2x)^{2} = 4x^{2}$$

$$- u^{2} = 1 - 4x^{2}$$

a)
$$u = 1 - 4x^2$$

$$\int \frac{1}{\sqrt{1-4x^2}} dx$$

no x term in integral

$$\chi = \sqrt{1-\mu}$$

(b)
$$u = 2x$$
 b) $u = 7dx$ $= \frac{1}{2} \sin^{-1}(u) + C$ $du = 7dx$ $= \frac{1}{2} \sin^{-1}(2x) + C$

POLL 3

Which u-substitution is better for:

$$\int_{e^4}^{e^9} \frac{1}{x\sqrt{\ln(x)}} dx$$

a)
$$u = \ln(x)$$

b)
$$u = \sqrt{\ln(x)}$$

POLL 4

Which u-substitution transformation is better for:

a)
$$u = e^{3x} + 1$$

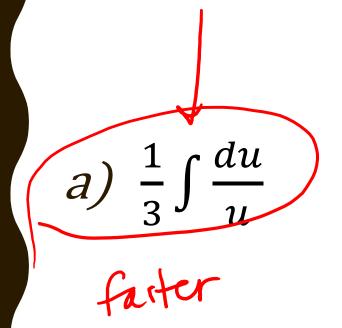
 $du = 3e^{2x}$

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

$$\int u = e^{3x}$$

$$du = 3e^{3x}$$

$$du = 3e^{3x}$$



b)
$$\frac{1}{3} \int \frac{du}{u+1}$$
 $v = u+1$ $dv = du$