November 6, 2026

National Nachos Day

Today in History:

John Phillip Sousa is born (1854)

Art Modell moves Browns to Baltimore (1995)

Number of the Day: 442

442 = 2 x 13 x 17

442 is the sum of eight consecutive primes

Fun Fact:

In Texas it is illegal to graffiti a cow.

Quote of the Day:

"Do, or do not. There is no 'try'."

- Yoda

Today's Weather:

Overcast with rain showers at times, cooler, high of 51°.

Math 121 - Quiz #36

Find

$$\int \left(3x^2 + \sin x + \frac{2}{\sqrt[3]{x}}\right)\, dx$$

$$= \int \left(3x^2 + \sin x + 2x^{-\frac{1}{3}}\right) dx$$

$$= x^3 - \cos x + \frac{3}{2} x^{\frac{2}{3}} + C$$

$$= x^3 - \cos x + 3\sqrt[3]{x^2} + C$$

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mpod #10

$$\int e^{2x-3}\, dx = \int e^{2x} e^{-3}\, dx$$

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

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

F.T.C. I

$$\lim_{N\to\infty} \sum_{j=1}^{N} f(x_j)\,\Delta x = \int_a^b f(x)\,dx \qquad \left(\begin{array}{c}\text{NET SIGNED}\\ \text{AREA}\end{array}\right)$$

$$\int f(x)\,dx = F(x) + C$$

WHERE $F'(x) = f(x)$

$$\int_a^b f(x)\,dx = F(b) - F(a)$$

WHERE $F'(x) = f(x)$

$$\int_a^b f(x)\,dx = F(x)\Big|_a^b = F(b) - F(a)$$

$$= (F(x) + C)\Big|_a^b$$

$$= (F(b) + C) - (F(a) + C)$$

$$= F(b) - F(a)$$

EXAMPLES

① $$\int_1^3 x\,dx = \frac{x^2}{2}\Big|_1^3 = \frac{9}{2} - \frac{1}{2} = 4$$

② $$\int_2^4 x^2\,dx = \frac{x^3}{3}\Big|_2^4 = \frac{64}{3} - \frac{8}{3} = \frac{56}{3}$$

(3) $\int_1^9 \frac{1}{\sqrt{x}}\,dx = \int_1^9 x^{-\frac{1}{2}}\,dx = 2x^{\frac{1}{2}}$

$= 2\sqrt{x}\Big|_1^9 = 2(3-1) = 4$

(4) $\int_0^{\pi} \sin x\,dx = -\cos x\Big|_0^{\pi} = -(-1-1) = 2$

(5) $\int_0^3 e^{2x}\,dx = \frac{e^{2x}}{2}\Big|_0^3 = \frac{1}{2}\left[e^6 - 1\right]$

(6) $\int_5^{10} \frac{1}{x}\,dx = \ln|x|\Big|_5^{10} = \ln 10 - \ln 5$

$= \ln 2$

(7) $\int_0^{\frac{\pi}{4}} \sec^2 x\,dx = \tan x\Big|_0^{\frac{\pi}{4}} = 1 - 0 = 1$

(8) $\int_0^2 (3x^5 - 7x + 4)\,dx$

$= \frac{3x^6}{6} - \frac{7x^2}{2} + 4x\Big|_0^2$

$= \frac{3(2)^6}{6} - \frac{7(2)^2}{2} + 8 - 0 = 26$

(9) $\int_1^2 \frac{x^3+1}{x^2}\,dx = \int_1^2 \frac{x^3}{x^2} + \frac{1}{x^2}\,dx$

$$= \int_1^2 \left(x + \frac{1}{x^2}\right) dx = \left(\frac{x^2}{2} - \frac{1}{x}\right)\Big|_1^2$$

$$\left(2 - \frac{1}{2}\right) - \left(\frac{1}{2} - 1\right) = 2$$

(10) $$\int_{\frac{\pi}{6}}^{\frac{\pi}{4}} (5 - 2\sec x \tan x)\, dx$$

$$5x - 2\sec x \Big|_{\frac{\pi}{6}}^{\frac{\pi}{4}}$$

$$\left(5\left(\frac{\pi}{4}\right) - 2\sec\left(\frac{\pi}{4}\right)\right) - \left(5\left(\frac{\pi}{6}\right) - 2\sec\left(\frac{\pi}{6}\right)\right)$$

$$\left(\frac{5\pi}{4} - 2\sqrt{2}\right) - \left(\frac{5\pi}{6} - \frac{4}{\sqrt{3}}\right)$$

$$\frac{5\pi}{12} - 2\sqrt{2} + \frac{4}{\sqrt{3}}$$