

Yesterday's Homework Questions

- Two real numbers, both between 0 and 2, are selected at random. What is the probability that their product is greater than 1?
- Consider the differential equation $\frac{dy}{dx} = \frac{1}{5x}$.
 - What does it mean to be a *differential equation*? What does it mean to be a *solution to a differential equation*?
 - Show that $y = \frac{1}{5} \ln(x)$ is a solution.
 - Show that $y = \frac{1}{5} \ln(5x)$ is a solution.
 - How can this be? Explain.

3. Evaluate:

(a) $\int \sin^2(x) dx$

(b) $\int \cos^3(t) \sin^4(t) dt$

(c) $\int \cos^3(\theta) d\theta$

(d) $\int \frac{5x+13}{x^2+5x+6} dx$

More Questions

5. A Riemann Sum

(a) Evaluate: $\lim_{n \rightarrow \infty} \sum_{k=0}^{n-1} 2 \left(1 + \frac{3k}{n}\right)^2 \frac{3}{n}$

(b) Is this a *left box* or *right box* Riemann sum? Explain.

6. Consider $A(x) = \int_1^x \ln(t) dt$ where $x \geq 1$. On a graph board, draw $y = \ln(t)$ in the first quadrant. Use the graph and an very easy antiderivative to rewrite $A(x)$ without an integral.

7. Show how to find $S_n = \sum_{i=0}^n ar^i$. Under what conditions will the sequence $\{S_n\}$ converge as $n \rightarrow \infty$?