CALCULUS 2

Class 31: Monday April 28

Course Review, Part 1

GROUPWORK

Consider the following expressions which are related to **key concepts** in Calculus 2. Write a few sentences explaining the meaning and context of each expression, and evaluate each of them, if possible.

A. $\displaystyle \lim_{N \to \infty} \sum_{k=1}^{N} \frac{1}{N} \sin\left(\frac{k}{N}\right)$

B. $\displaystyle \sum_{k=1}^{\infty} \frac{1}{k} \sin(kx)$

C. $\displaystyle \sum_{k=1}^{\infty} \sin\left(\frac{1}{k}\right)$

Illegal Integrals

An **illegal integral** is an integral which some of the parts of the integral are missing. We can not evaluate illegal integrals. An illegal integral typically occurs when some of the symbols associated with integration is used incorrectly.

$\boxed{\text{Exercise}}$

For the integrals below, indicate which of them are **ILLEGAL.**

There are no typos on this page. If you can, evaluate the integral.

1. $\displaystyle\int_0 x\cos(x)\,dx =$

2. $\displaystyle\int e^{-x}\sin\,dx =$

3. $\displaystyle\int \sin(x^2+1)\,2x\,dx =$

4. $\displaystyle\int \sin(u)\,2x\,dx =$

5. $\displaystyle\int \sin(u)\,du =$

6. $\displaystyle\int we^w =$

7. $\displaystyle\int_0^1 we^w\,dx =$

8. $\displaystyle\int_0^1 we^w\,dw =$

9. $\displaystyle\int_0^1 te^{t^2}\,dt =$

10. $\displaystyle\int_0^1 e^{t^2}\,dt =$