

Illegal Integrals
Class 19: Wednesday March 12

We have to be very careful when we write down an integral. For anti-derivatives (indefinite integrals), we must always indicate what is the integrand and what is the variable we are integrating with respect to.

For (definite) integrals, we must also indicate exactly what are the limits of integration.

An **illegal integral** is an integral which some of the parts of the integral are missing. We can not evaluate illegal integrals. For the integrals below, indicate which of them are **ILLEGAL**.

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

GroupWork

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

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

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

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

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

6. $\int we^w =$

7. $\int_0^1 wc^w dx =$

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

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

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

My Favorite Test Question

1 Given the following information about an unknown function $g(x)$

$$\int_1^2 g(t) dt = 3, \quad \int_1^4 g(s) ds = 5, \quad g(1) = -1, \quad g'(1) = 2, \quad g(2) = -2, \quad g'(2) = \pi$$

you can still answer the questions below:

(a) Evaluate $I = \int_1^4 \frac{g(\sqrt{x})}{\sqrt{x}} dx =$

(b) Evaluate $I = \int_1^2 xg'(x) dx =$