IMPROPER INTEGRALS

An improper integral is one in which the upper or lower limit of the integral is infinity

For example,

CONVERGENCE AND DIVERGENCE

1. If you get a finite number when you solve an improper integral, the integral is **convergent**.

2. If you get an infinite or non existent number like infinity, the integral is **divergent**.

Solving the above example, we follow the following steps

1. Replace infinity with some variable (t)

2. Find the limit of the new expression as t tends to infinity

3. Next we evaluate the limit

Therefore the improper integral , is divergent

Example 2

Therefore, the improper integral is convergent.

INTEGRAL OF IMPROPER P-SERIES

Given an integral

If , then the improper integral is divergent

If , then the improper integral is convergent

For example, if we take a look at the integral of

You’ll see that when we expand the denominator, the highest power of x will be 2. This is greater than 1. Hence, we can conclude that it is convergent