

① Review of integration concept:-

Integration is the act of bringing together smaller component into a single system that functions as one. Integration is harder to achieve the greater the num of systems that are involved and companies often choose to have external contractors manage some or all phases of development of new system-

TRAPEZOIDAL RULES

In mathematic and more specially in no analysis the trapezoidal rule also known as trapezium rule is a technique for approximating the definite integral.

→ It is a rule to evaluate the area under the curve by dividing the total area into smaller trapezoids rather than using rectangles. This integration works by approximating region under the graph of a f(x) as a trapezoid and it calculates the area.

→ It is based on Newton-Cotes formula that states if one can approximate the integrand as an n th order polynomial, use single segment, trapezoidal rule to find distance covered.

It is nothing more than the average of left hand and right hand Riemann sums. It provide more accurate approximation of total change than either sum does alone. Simpson's rule is weighted average that results is a even more accurate approximation.

Simpson's

solving buoyancy and stability problems when designing a new marine vessel. Example of the use of Simpson's rule in this discipline

include the calculation of vessels displacement, total wetted surface area, and the calculation of the longitudinal centre of buoyancy of the hull.

→ It is the numerical method for approximating the integral of a function b/w two limits, a and b . It's base on knowing the area under a parabola, or a plane curve

→ we seek an even better approximation for the area under a curve. In this we will use parabola to approximate each part of the curve. This proves to be very efficient since, it's generally

more accurate than other numerical-method. we have seen

→ Riemann sums use rectangles which make for some pretty sloppy approximation. But what if we use trapezoids to approximate the area under a function instead? key idea:

By using trapezoids we can get more accurate approximation than by using rectangles.
