**Computing deflection when support conditions change between intervals**

Deflection at the end of interval *i* is the sum of the deflection at the end of interval *i*-1 and the change in deflection during interval *i*.

From the principle of virtual work, the deflections at the ends of intervals *i* and *i*-1 are

Where *m* is the moment due to a unit load at the location the deflection is being computed.

Rearranging and substituting, the change in deflection during interval *i* is

The curvature at the end of interval *i* is the sum of the curvature at the end of interval *i*-1 and the change in curvature during interval *i*

Substituting the change in deflection during interval *i* becomes

And the deflection at the end of interval *i* is

A similar derivation can be performed for rotation (where *m* is the moment due to a unit moment at the location where the rotation is being computed)

Written as a Riemann sum using the trapezoid rule