Modified Euler's Method:

This method is known as predictor-corrector method. Here the slope is approximated at the middle of the interval.

The algorithm for predictor formula is

$$y_{i+1} = y_i + hf(x_i, y_i) \qquad \text{...(7.62)}$$

and the algorithm for the corrector formula is

$$y_{i+1} = y_i + \frac{h}{2}\left[f(x_i, y_i) + f(x_{i+1}, y_{i+1})\right] \qquad \text{...(7.63)}$$

From above it is obvious that, the predictor formula is the same as the Eulers' method where we obtain y_{i+1} at x_{i+1} with the initial value (or initial condition) of y_i at x_i. Then we correct the value of y_{i+1} thus obtained with the help of corrector formula.