

$$f(a)\left(-\frac{a}{6} + \frac{b}{6}\right) + f(x_m)\left(-\frac{2a}{3} + \frac{2b}{3}\right) + f(b)\left(-\frac{a}{6} + \frac{b}{6}\right) \approx I$$

$$\frac{1}{6}f(a)(-a+b) + \frac{1}{6}f(x_m)(-4a+4b) + \frac{1}{6}f(b)(-a+b) \approx I$$

$$\frac{1}{6}f(a)(b-a) + \frac{1}{6}f(x_m)(b-a) + \frac{1}{6}f(b)(b-a) \approx I$$

$$(b-a)\left(\frac{1}{6}f(a) + \frac{1}{6}f(x_m) + \frac{1}{6}f(b)\right) \approx I$$

$$\frac{(b-a)}{6}(f(a) + 4f(x_m) + f(b)) \approx I$$

$$h = 2(b-a)$$

$$\frac{h}{3}(f(a) + 4f(x_m) + f(b)) \approx I$$