(2)

$g(x) = ax^2 + bx + c \quad [-h, h$

$$\int_{-h}^{h} g(x)\,dx = \int_{-h}^{h} ax^2 + bx + c.$$

$$\Rightarrow \left[\frac{ax^3}{3} + \frac{bh^2}{2} + ch - \left[\frac{ah^3}{3} + \frac{bh^2}{2} - ch\right]\right]$$

$$\Rightarrow \frac{ah^3}{3} + \frac{bh^2}{2} + ch + \left[-\frac{ah^3}{3} + \frac{bh^2}{2} - ch\right]$$

$$\Rightarrow \frac{ah^3}{3} + \cancel{\frac{bh^2}{2}} + ch + \frac{ah^3}{3} - \cancel{\frac{bh^2}{2}} + ch.$$

$$\Rightarrow \frac{2}{3}ah^3 + 2ch$$

$$\Rightarrow \frac{h}{3}\left[2ah^2 + 6c\right] \text{ — (A)}$$

$g(x) = ax^2 + bx + c$

$f(-h) = g(-h) = ah^2 - bh + c$ — (1)

$f(0) = g(0) = c$ — (2)

$f(h) = g(h) = ah^2 + bh + c$ — (3)

adding ① and ③

$$f(-h) + f(h) = 2ah^2 + 2c$$

$$\Rightarrow y_0 + y_2 = 2ah^2 + 2y_1$$

$$\Rightarrow \boxed{2ah^2 = y_0 - 2y_1 + y_2}$$

Substitute the value of solution ④ we get

$$\Rightarrow \frac{h}{3}\left[y_0 - 2y_1 + y_2 + 6y_1\right]$$

$$\frac{h}{3}\left[y_0 + 4y_1 + y_2\right] \approx \int_{-h}^{h} f(x)\,dx.$$

$$\frac{h}{3}\left[y_2 + 4y_3 + y_4\right]$$

while points are (x_2, y_2), (x_3, y_3) and $(x_4 + y_4]$

$$\frac{h}{3}\left[y_{n-3} + 4y_{n-1} + y_n\right]$$

$$\int_a^b f(x)\,dx = \frac{h}{3}\Big[(y_0 + y_n) + 4(y_1 + y_2 + y_3 + \cdots + y_{n-1})$$

$$+ 2(y_2 + y_4 + y_6 + \cdots y_{n-2})\Big]$$

(ii) $\int \frac{x-1}{x+1}\,dx$?

Ans $\int \frac{x-1}{x+1}\,dx = x - 2\ln|x+1| + C$

$\int \frac{x+1}{x+1}\,dx \Rightarrow \int \frac{x+1-2}{x+1}\,dx =$

$\int \left(1 - \frac{2}{x+1}\right) dx$

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$$\int \frac{x-1}{x+1}\,dx = \int dx - 2\int \frac{dx}{x+1}$$

$$\frac{x-1}{x+1}\,dx = x - 2\ln|x+1| + C$$

?

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$ ~~[illegible]~~