A6 Q3

Saturday, November 20, 2021 5:35 PM

3. $\alpha S(-\frac{1}{3}) + \beta S(0) + \gamma S(\frac{1}{2}) \qquad \int_{-1}^{1} S(x) = I(x^k) \qquad \int_{-1}^{1} x^k = \left|_{-1}^{1} \frac{x^{k+1}}{k+1} = \frac{1}{k+1} - \frac{(-1)^{k+1}}{k+1} = \frac{1-(-1)^{k+1}}{k+1}\right.$

$k=0,\ I(x^k) = 2$
$k=1,\ I(x^k) = 0$
$k=2,\ I(x^k) = 2/3$

$\alpha + \beta + \gamma = 2$
$\alpha(-1/3) + \gamma(1/2) = 0$
$\alpha(-1/3)^2 + \gamma(1/2)^2 = 2/3$

$\alpha = 12/5$
$\beta = -2$
$\gamma = 8/5$