2.46
5

(1). $\int_1^2 f(x)\,dx = \int_2^3 [A - f(x)]\,dx$

$F(2) - F(1) = A - F(3) + F(2)$

$A = F(3) - F(1) = \int_1^3 f(x)\,dx$

(2) $\frac{1}{2}\int_1^3 g(x)\,dx = \frac{1}{2}\int_1^3 [A - f(x)]\,dx = \frac{1}{2}[2A - A] = \frac{1}{2}A$

(3) $\int_n^{n+1} f(x) = \int_n^{n+1} [3A - g(x)]\,dx = \int_n^{n+1} [2A + 2f(x)]\,dx$

$F(n+1) - F(n) = 2A + 2F(n+1) - 2F(n)$

$-2A = F(n+1) - F(n) = \int_n^{n+1} f(x)\,dx$