Ex) $f(x) = 2x^3 - 1$ $[0, 6]$ $n = 3$

right endpoints

$\Delta x = \frac{b-a}{n} = \frac{6-0}{3} = \frac{6}{3} = 2$

$[0, 2]$ $[2, 4]$ $[4, 6]$ $x = 2, 4, 6$

$A = [f(2) + f(4) + f(6)]\Delta x$

$[7 + 31 + 71](2) = 109 \cdot 2 = 218$

$f(x) = 2x^2 - 1$ $[0,6]$ $n=3$

midpoints

$[0,2]$ $[2,4]$ $[4,6]$

$\frac{6+4}{2} = 5$

1 3 5

$\Delta x = 2 = \frac{b-a}{n}$

$A = [f(1) + f(3) + f(5)]\Delta x$

$= [1 + 17 + 49](2) = 67 \cdot 2 = \boxed{134}$

Ex)

$f(x) = \sqrt[3]{x}$

$= 1x^{1/3}$

$F(x) = \frac{3}{4}x^{4/3} + C$

$\frac{3}{4} \cdot \frac{4}{3} x^{4/3-1} = 1x^{1/3} = \sqrt[3]{x}$ ✓

Ex) $f''(x) = 12x + 2 - e^x$ $\quad f(0) = 0 \quad f(1) = 8 - e$

$f'(x) = 6x^2 + 2x - e^x + C$

$f(x) = 2x^3 + x^2 - e^x + 4x + 1$

$f(1) = 0 = 2(0) + (0) - e^0 + C(0) + k$

$0 = -1 + k \rightarrow k = 1$

$f(1) = 8 - e = 2(1) + (1) - e^1 + C(1) + 1$

$8 - e = 2 + 1 - e + C + 1$ $\qquad 8 = 4 + C$

$8 - e = 4 + C - e$ $\qquad \rightarrow C = 4$