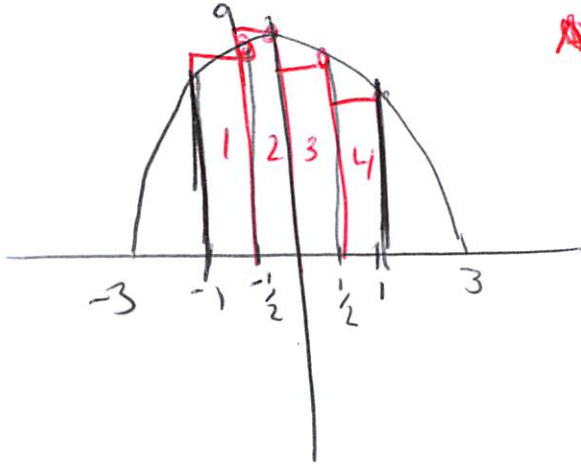


# Review Sheet Answers

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①  $y = -x^2 + 9$   $[-1, 1]$



~~$R_{H4} \approx AR_1 + AR_2 + AR_3 + AR_4$~~

$$R_{H4} \approx \frac{1}{2} (f(-\frac{1}{2}) + f(0) + f(\frac{1}{2}) + f(1))$$

$$R_{H4} \approx \frac{1}{2} \left( -\frac{1}{4} + 9 + 9 + -\frac{1}{4} + 9 + 8 \right)$$

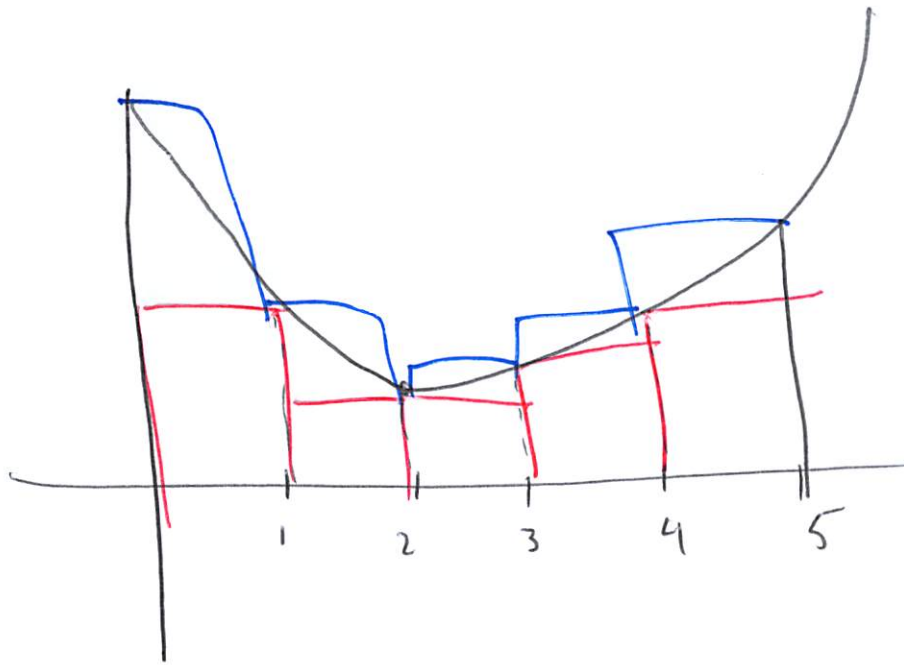
$$R_{H4} \approx \frac{1}{2} (8.75 + 9 + 8.75 + 8)$$

$$R_{H4} \approx \frac{1}{2} (34.5) \rightarrow \boxed{17.25}$$

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②  $y = x^2 - 4x + 9$   $[0, 5)$

$$(2) y = x^2 - 4x + 9 \quad [0, 5]$$



Inscribed

$$I_4 \approx 1 (f(1) + f(2) + f(2) + f(3) + f(4))$$

Circumscribed

$$C_4 \approx 1 (f(0) + f(1) + f(3) + f(4) + f(5))$$

Trapezoidal

$$\frac{\text{Inscribed} + \text{Circumscribed}}{2}$$

Ex. 1]  $2x^2 - 3x - 2$  (A) (B)



संख्या रेखा

$$(2) \times 2 + (14) \times 2 + (8) \times 2 + (1) \times 2 + (0) \times 2 \quad | \quad \text{संख्या रेखा}$$

संख्या रेखा      संख्या रेखा

$$(3) \quad y = x^2 - 4x \quad [0, 2]$$

$$b - a = \frac{b - a}{n}$$

$$\lim_{n \rightarrow \infty} \frac{2}{n} \left( f\left(\frac{2}{n}\right) + f\left(\frac{4}{n}\right) + f\left(\frac{6}{n}\right) \dots \right)$$

$$b - a = \frac{2 - 0}{n} = \frac{2}{n}$$

$$\lim_{n \rightarrow \infty} \frac{2}{n} \left( \left(\frac{2}{n}\right)^2 - 4\left(\frac{2}{n}\right) + \left(\frac{4}{n}\right)^2 - 4\left(\frac{4}{n}\right) + \left(\frac{6}{n}\right)^2 - 4\left(\frac{6}{n}\right) \dots \right)$$

$$\lim_{n \rightarrow \infty} \frac{2}{n} \left( \frac{4}{n^2} - \frac{8}{n} + \frac{16}{n^2} - \frac{16}{n} + \frac{36}{n^2} - \frac{24}{n} \dots \right)$$

$$\lim_{n \rightarrow \infty} \frac{2}{n} \left( \frac{4}{n^2} + \frac{16}{n^2} + \frac{36}{n^2} \dots + \frac{8}{n} - \frac{16}{n} - \frac{24}{n} \dots \right)$$

$$\lim_{n \rightarrow \infty} \frac{8}{n^3} (K^2) - \frac{16}{n^2} (K)$$

$$\lim_{n \rightarrow \infty} \frac{8}{n^3} \left( \frac{2n^3}{6} + \frac{3n^2}{6} + \frac{n}{6} \right) - \frac{16}{n^2} \left( \frac{n^2}{2} + \frac{n}{2} \right)$$

$$\frac{16}{6} - 8$$

$$\frac{-32}{6} \rightarrow \left( -5 \frac{1}{3} \right)$$

(4)  $y = x^2 + 5x$   $[1, 4]$

Base =  $\frac{4-1}{n} = \frac{3}{n}$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( f\left(1 + \frac{3}{n}\right) + f\left(1 + \frac{6}{n}\right) + f\left(1 + \frac{9}{n}\right) \dots \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( \left(1 + \frac{3}{n}\right)^2 + 5\left(1 + \frac{3}{n}\right) + \left(1 + \frac{6}{n}\right)^2 + 5\left(1 + \frac{6}{n}\right) + \left(1 + \frac{9}{n}\right)^2 + 5\left(1 + \frac{9}{n}\right) \dots \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( 1 + \frac{6}{n} + \frac{9}{n^2} + 5 + \frac{15}{n} + 1 + \frac{12}{n} + \frac{36}{n^2} + 5 + \frac{30}{n} + 1 + \frac{18}{n} + \frac{81}{n^2} + 5 + \frac{45}{n} \dots \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( 6 + \frac{21}{n} + \frac{9}{n^2} + 6 + \frac{42}{n} + \frac{36}{n^2} + 6 + \frac{63}{n} + \frac{81}{n^2} \dots \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( 6 + 6 + 6 \dots + \frac{21}{n} + \frac{42}{n} + \frac{63}{n} \dots + \frac{9}{n^2} + \frac{36}{n^2} + \frac{81}{n^2} \dots \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( 6n + \frac{21}{n} (k) + \frac{9}{n^2} (k^2) \right)$

$\lim_{n \rightarrow \infty} \frac{3}{n} \left( 6n + \frac{21}{n} \left( \frac{n^2}{2} + \frac{n}{2} \right) + \frac{9}{n^2} \left( \frac{2n^3}{6} + \frac{3n^2}{6} + \frac{n}{6} \right) \right)$

$18 + \frac{63}{2} + \frac{54}{6}$

$18 + \frac{63}{2} + 9$

$27 + \frac{63}{2} \rightarrow \frac{34}{2} + \frac{63}{2} \rightarrow \frac{117}{2} = 58 \frac{1}{2}$

$$(5) \sum_{k=1}^{23} 7k^2 + k^3$$

$$7 \left( \frac{2n^3 + 3n^2 + n}{6} \right) + \frac{n^4 + 2n^3 + n^2}{4}$$

Plug 23 in for n

$$30268 + 76176$$

$$\boxed{380,880}$$

$$(6) \sum_{1}^{37} - \sum_{1}^6$$

↓ Plug in "37"

Plug in "6"

$$\left[ 2 \left( \frac{2n^3 + 3n^2 + n}{6} \right) + 5 \left( \frac{n^2 + n}{2} \right) \right] - \left[ 2 \left( \frac{2n^3 + 3n^2 + n}{6} \right) + 5 \left( \frac{n^2 + n}{2} \right) \right]$$

$$(20,832 + 2480) - (182 + 105)$$

$$(23,312) - 287$$

$$\boxed{23,025}$$

$$7) \int_0^5 3x^2 + 5x \, dx$$

$$x^3 + \frac{5x^2}{2} \Big|_0^5$$

$$\textcircled{a} 5 \quad - \quad \textcircled{a} 0$$

$$\left( 5^3 + 5 \frac{(5)^2}{2} \right) - (0)$$

$$125 + \frac{125}{2}$$

$$\frac{375}{2} \quad \text{or} \quad 187\frac{1}{2}$$

$$\textcircled{8) \int_2^7 x^3 + 9 \, dx$$

$$\frac{x^4}{4} + 9x \Big|_2^7$$

$$\textcircled{a} 7 \quad - \quad \textcircled{a} 2$$

$$\left( \frac{7^4}{4} + 9(7) \right) - \left( \frac{2^4}{4} + 9(2) \right)$$

$$(600.25 + 63)$$

$$\rightarrow (4 + 18)$$

$$- 22$$

$$= 641.25$$