

MATHEMATICS 201-203-RE

Integral Calculus

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II - Sigma Notation and Areas

1. Write the sum in expanded form.

a) $\sum_{i=1}^5 (2i+1)$

b) $\sum_{k=0}^4 \frac{(-1)^k}{k^2+1}$

c) $\sum_{i=2}^4 5^i$

d) $\sum_{i=1}^n i^4$

2. Write the sum in sigma notation.

a) $1+2+3+4+\dots+10$

b) $\frac{1}{3}+\frac{2}{4}+\frac{3}{5}+\dots+\frac{18}{20}$

c) $1+3+9+27+81+243$

d) $1-3+5-7+9-11$

3. Find the value of the sum.

a) $\sum_{i=3}^6 (4i-3)$

b) $\sum_{i=1}^{25} (-1)^i$

c) $\sum_{i=1}^{15} (2i^2-3i+4)$

d) $\sum_{i=1}^{10} (i^3-5i+3)$

e) $\sum_{i=1}^n (i^2+2i-3)$

f) $\sum_{i=1}^n (i-1)(i+2)$

g) $\sum_{i=1}^n (2i^3-i+1)$

h) $\sum_{i=1}^n \left(\frac{1}{n}-\frac{3i}{n}\right)$

4. Consider the function f whose graph is given. Estimate the area under f on the given interval using the given number of rectangles and (i) right endpoints (ii) left endpoints.

a) on $[0,6]$ using 6 rectangles.

b) on $[2,10]$ using 4 rectangles.



