FIND OUT
why i?

$\rightarrow$ "index of
summation"

6.4 Sigma Notation and Series

A sequence is a <u>list</u> of numbers, according to a rule

$$u_1, u_2, u_3, \ldots, u_n, \ldots$$

$u_1 + u_2 + u_3 + \cdots + u_n$ is the <u>summation</u> of the terms of a sequence – called a <u>series</u>.

$\sum$ Greek letter Sigma and is used to represent <u>Summation</u>   "Sigma notation"

$$\sum_{i=1}^{n}$$ means the sum of the first n terms of a sequence.

In words, "The sum of all terms u_i from $i=1$ to $i=n$"

<u>Ex</u> WRITE THE EXPRESSION $\displaystyle\sum_{i=1}^{4}(x^2-3)$ as a sum of terms

a.

b. Calculate the sum of these terms

a. $\displaystyle\sum_{i=1}^{4}(x^2-3) = (1^2-3) + (2^2-3) + (3^2-3) + (4^2-3)$
$$= -2 + 1 + 6 + 13$$

b. $-2 + 1 + 6 + 13 = 18$

Ex] Evaluate $\sum_{m=1}^{7} (m^2) = 1^2+2^2+3^2+4^2+5^2+6^2+7^2$

$\qquad = 1+4+9+16+25+36+49$

$\qquad =$

Ex) WRITE THE SERIES $\overset{1}{2}40+\overset{2}{120}+\overset{3}{60}+\overset{4}{30}+\overset{5}{15}+\overset{6}{7.5}$ using

$\qquad\qquad\qquad\qquad\qquad \underset{\div 2}{}\quad \underset{\div 2}{}\quad \underset{\div 2}{}$

$\qquad$ Sigma notation

$\qquad\qquad$ Geometric series $u_1 = 240$, $r = \frac{1}{2}$

$\qquad\qquad\qquad \sum_{i=1}^{6} 240\left(\frac{1}{2}\right)^{n-1}$

HW 6F p.171 #1-3