

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 17a: Math IBSL - Standard 17 - Number Patterns and Sigma Notation

5 points

- 1 For each of the following series in sigma notation, find the terms and calculate the sum:

a $\sum_{n=1}^4 (-1)^n (n+1)$ b $\sum_{n=2}^6 4n-3$

c $\sum_{n=1}^3 n(n+1)$ d $\sum_{n=3}^5 \frac{(-1)^{n+1}}{n-2}$

a) $-2 + 3 - 4 + 5 = \boxed{2}$

b) $5 + 9 + 13 + 17 + 21 = \boxed{65}$

c) $2 + 6 + 12 = \boxed{20}$

d) $1 - \frac{1}{2} + \frac{1}{3} = \frac{6}{6} - \frac{2}{6} + \frac{2}{6} = \boxed{\frac{5}{6}}$

(Use back of paper if you need more room)

- 2 Write each of the following series in sigma notation:

a $4 + 16 + 64 + 256 + \dots$

b $\frac{3}{4} + \frac{4}{5} + \frac{5}{6}$ c $-1 + \frac{1}{2} - \frac{1}{3} + \frac{1}{4} - \dots + \frac{1}{100}$

d $-2 - 2 - 2 - 2 - 2 - 2 - 2 - 2$

e $5 + 10 + 17 + 26 + \dots$

f $49m^6 + 64m^7 + 81m^8 + 100m^9 + 121m^{10}$

a) $\sum_{n=1}^8 4^n$

d) $\sum_{n=1}^{\infty} -2$

b) $\sum_{n=1}^{\infty} \frac{n+2}{n+3}$

e) $\sum_{n=2}^{\infty} n^2 + 1$

c) $\sum_{n=1}^{\infty} (-1)^n \left(\frac{1}{n}\right)$

f) $\sum_{n=7}^{\infty} n^2 (m^{n-1})$