Name_____

Introduction to Series

Date_____ Period____

Rewrite each series as a sum.

1) $\sum_{m=1}^{5} (4m^2 + 4)$

2) $\sum_{k=1}^{5} (30 - k^2)$

3) $\sum_{n=1}^{5} n$

4) $\sum_{m=1}^{6} (50 - m)$

5) $\sum_{a=1}^{6} (3a^2 - 2)$

6) $\sum_{m=1}^{5} (100 - m)$

7) $\sum_{m=1}^{4} (5m^2 + 4)$

8) $\sum_{a=4}^{9} (20 - a^2)$

9) $\sum_{m=1}^{6} \frac{m^2 + 1}{m}$

10) $\sum_{n=4}^{9} (100 - n)$

11) $\sum_{m=0}^{5} m(m + 2)$

12) $\sum_{k=0}^{4} (100 - k)$

Evaluate each series.

13) $\sum_{n=1}^{7} (40 - n^2)$

14) $\sum_{k=1}^{5} 3k$

15) $\sum_{a=1}^{7} (500 - a)$

16) $\sum_{k=1}^{7} (30 - k)$

17) $\sum_{a=0}^{5} a$

18) $\sum_{k=0}^{4} 2k$

19) $\sum_{k=1}^{6} k^2$

20) $\sum_{m=1}^{5} 3m$

Rewrite each series using sigma notation.

21) $1 + 2 + 3 + 4$

22) $3 + 9 + 27 + 81 + 243$

23) $3 + 9 + 27 + 81$

24) $1 + 4 + 9 + 16 + 25$

25) $4 + 8 + 12 + 16$

26) $2 + 4 + 6 + 8 + 10$

27) $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6}$

28) $5 + \frac{5}{2} + \frac{5}{3} + \frac{5}{4} + 1$

29) $1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6}$

30) $\frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \frac{4}{5} + \frac{5}{6} + \frac{6}{7}$

Critical thinking questions:

31) Are these equal? Why or why not?

$\sum_{x=1}^{50} \frac{1}{x}$ and $\sum_{x=21}^{70} \frac{1}{x-20}$

32) Rewrite the following so that it starts at $x = 0$

$\sum_{x=7}^{10} x(x+1)$

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Introduction to Series

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Rewrite each series as a sum.

1) $\sum_{m=1}^{5} (4m^2 + 4)$

$8 + 20 + 40 + 68 + 104$

2) $\sum_{k=1}^{5} (30 - k^2)$

$29 + 26 + 21 + 14 + 5$

3) $\sum_{n=1}^{5} n$

$1 + 2 + 3 + 4 + 5$

4) $\sum_{m=1}^{6} (50 - m)$

$49 + 48 + 47 + 46 + 45 + 44$

5) $\sum_{a=1}^{6} (3a^2 - 2)$

$1 + 10 + 25 + 46 + 73 + 106$

6) $\sum_{m=1}^{5} (100 - m)$

$99 + 98 + 97 + 96 + 95$

7) $\sum_{m=1}^{4} (5m^2 + 4)$

$9 + 24 + 49 + 84$

8) $\sum_{a=4}^{9} (20 - a^2)$

$4 + (-5) + (-16) + (-29) + (-44) + (-61)$

9) $\sum_{m=1}^{6} \frac{m^2 + 1}{m}$

$2 + \frac{5}{2} + \frac{10}{3} + \frac{17}{4} + \frac{26}{5} + \frac{37}{6}$

10) $\sum_{n=4}^{9} (100 - n)$

$96 + 95 + 94 + 93 + 92 + 91$

11) $\sum_{m=0}^{5} m(m + 2)$

$0 + 3 + 8 + 15 + 24 + 35$

12) $\sum_{k=0}^{4} (100 - k)$

$100 + 99 + 98 + 97 + 96$

Evaluate each series.

13) $\sum_{n=1}^{7} (40 - n^2)$

140

14) $\sum_{k=1}^{5} 3k$

45

15) $\sum_{a=1}^{7}(500-a)$

3472

16) $\sum_{k=1}^{7}(30-k)$

182

17) $\sum_{a=0}^{5} a$

15

18) $\sum_{k=0}^{4} 2k$

20

19) $\sum_{k=1}^{6} k^2$

91

20) $\sum_{m=1}^{5} 3m$

45

Rewrite each series using sigma notation.

21) $1+2+3+4$

$\sum_{n=1}^{4} n$

22) $3+9+27+81+243$

$\sum_{m=1}^{5} 3^m$

23) $3+9+27+81$

$\sum_{n=1}^{4} 3^n$

24) $1+4+9+16+25$

$\sum_{k=1}^{5} k^2$

25) $4+8+12+16$

$\sum_{k=1}^{4} 4k$

26) $2+4+6+8+10$

$\sum_{n=1}^{5} 2n$

27) $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+\frac{5}{6}$

$\sum_{a=1}^{5} \frac{a}{a+1}$

28) $5+\frac{5}{2}+\frac{5}{3}+\frac{5}{4}+1$

$\sum_{k=1}^{5} \frac{5}{k}$

29) $1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\frac{1}{6}$

$\sum_{a=1}^{6} \frac{1}{a}$

30) $\frac{1}{2}+\frac{2}{3}+\frac{3}{4}+\frac{4}{5}+\frac{5}{6}+\frac{6}{7}$

$\sum_{a=1}^{6} \frac{a}{a+1}$

Critical thinking questions:

31) Are these equal? Why or why not?

$\sum_{x=1}^{50} \frac{1}{x}$ and $\sum_{x=21}^{70} \frac{1}{x-20}$

Yes. Both are $1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\cdots$ to 50 terms

32) Rewrite the following so that it starts at $x=0$

$\sum_{x=7}^{10} x(x+1)$

$\sum_{x=0}^{3} (x+7)(x+8)$