

Assignment # _____

Find the rule for the nth term.

1) 0, 3, 8, 15, 24, ...

2) 2, 5, 10, 17, 26, ...

3) 1, 9, 25, 49, 81, ...

4) 2, 1, $\frac{8}{9}$, 1, $\frac{32}{25}$, ...

Find the rule for the nth term of the arithmetic sequence.

5) $a_{10} = 68$, $d = 9$

6) $a_{17} = -304$ and $a_{32} = -604$

Find the nth term of the geometric sequence.

7) 2, -12, 72, -432, ...

8) $a_3 = 108$ and $a_5 = 3888$

9) $a_6 = 3125$, $r = 5$

10) $a_1 = 1$, $r = 3$

Find the sum of the arithmetic series.

11) $\sum_{i=1}^{14} (7i - 7)$

12) $(-8) + (-6) + (-4) + (-2) \dots$, $n = 10$

Find the number of terms in the following arithmetic series.

13) $a_1 = 16$, $d = 7$, $S_n = 201$

Determine the number of terms n in each arithmetic series.

14) $\sum_{k=1}^n (4k - 6) = 1680$

Find the sum of the geometric series

15) $\sum_{k=1}^8 -3 \cdot (-4)^{k-1}$

Determine the number of terms n in each geometric series.

16) $-4 - 16 - 64 - 256\dots, S_n = -349524$

17) $\sum_{k=1}^n (-6)^{k-1} = 31$

Determine the number of terms n in each geometric series.

18) $a_1 = 4, r = 5, S_n = 124$

19) $-4 - 16 - 64 - 256\dots, S_n = -1364$

20) $\sum_{m=1}^n 3 \cdot 4^{m-1} = 16383$

Rewrite each series using sigma notation.

21) $501 + 502 + 503 + 504 + 505 + 506$

22) $4 + 8 + 12 + 16 + 20 + 24$

23) $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64}$

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

Evaluate each series.

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

26) $\sum_{m=1}^7 (200 - m^2)$

Evaluate the series using the arithmetic/geometric series formula.

27) $\sum_{m=3}^8 (3m - 1)$

28) $\sum_{m=4}^8 2 \cdot 3^{m-1}$

29) Write the n th term/explicit rule

$$-2, \frac{3}{4}, -\frac{4}{9}, \frac{5}{16}, \dots$$

Find k

30) $\sum_{n=3}^k 2 \cdot 3^{n-1} = 6552$

31) $\sum_{n=3}^6 (2 - 3n) = \sum_{n=5}^8 \underline{\hspace{1cm}}$

Answers to Assignment # _____

1) $a_n = n^2 - 1$

2) $a_n = n^2 + 1$

3) $a_n = (2n - 1)^2$

4) $a_n = \frac{2^n}{n^2}$

5) $a_n = -22 + 9n$

6) $a_n = 36 - 20n$

7) $a_n = 2 \cdot (-6)^{n-1}$

8) $a_n = 3 \cdot (-6)^{n-1}$; AND $a_n = 3 \cdot 6^{n-1}$

9) Explicit: $a_n = 5^{n-1}$

10) Explicit: $a_n = 3^{n-1}$

11) 637

12) 10

13) 6

14) 30

15) 39321

16) 9

17) 3

18) 3

19) 5

20) 7

21) $\sum_{n=1}^6 (n + 500)$

22) $\sum_{k=1}^6 4k$

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

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

25) 25

26) 1260

27) 93

28) 6534

29) $a_n = (-1)^n \cdot \frac{n+1}{n^2}$

30) 8

31) $\sum_{n=5}^8 (8 - 3n)$