

Ch 12 review

Date _____ Period _____

Evaluate

1) $\sum_{m=1}^{10} (10m - 20)$

2) $\sum_{k=1}^{10} (-2k - 5)$

3) $\sum_{n=1}^7 (-6)^{n-1}$

4) $\sum_{i=1}^8 (-3)^{i-1}$

Determine the number of terms n in each arithmetic series.

5) $a_1 = 3, a_n = 31, S_n = 255$

6) $a_1 = -1, a_n = 97, S_n = 2400$

Determine if each geometric series converges or diverges.

7) $\sum_{m=1}^{\infty} -\left(-\frac{1}{3}\right)^{m-1}$

8) $\sum_{n=1}^{\infty} 4 \cdot \left(-\frac{3}{2}\right)^{n-1}$

9) $\sum_{k=1}^{\infty} \frac{27}{4} \cdot \left(\frac{2}{3}\right)^{k-1}$

10) $\sum_{k=1}^{\infty} -6 \cdot \left(\frac{1}{4}\right)^{k-1}$

11) $\sum_{i=1}^{\infty} 2 \cdot (-3)^{i-1}$

12) $\sum_{n=1}^{\infty} -4 \cdot 2^{n-1}$

13) $\sum_{m=1}^{\infty} 1.2 \cdot 0.5^{m-1}$

Determine the common ratio of the infinite geometric series.

14) $a_1 = 1, S = 2.5$

15) $a_1 = 1, S = 10$

Evaluate each infinite geometric series described.

16) $\sum_{k=1}^{\infty} 2 \cdot \left(\frac{1}{2}\right)^{k-1}$

17) $\sum_{k=1}^{\infty} 4 \cdot 3^{k-1}$

Rewrite each series using sigma notation.

18) $5 + 25 + 125 + 625$

19) $1 + 4 + 9 + 16 + 25$

Find the tenth term in each sequence.

$$20) a_n = -\frac{37}{15} + \frac{2}{3}n$$

$$21) a_n = \frac{2^n}{2n + 1}$$

Determine if the sequence is geometric. If it is, find the common ratio, the 8th term, and the explicit formula.

$$22) 3, -18, 108, -648, \dots$$

$$23) 4, 8, 16, 32, \dots$$

Evaluate each infinite series described.

$$24) \sum_{i=1}^{\infty} 9.4 \cdot 0.8^{i-1}$$

$$25) \sum_{m=1}^{\infty} 243 \cdot \left(\frac{1}{3}\right)^{m-1}$$

Find the explicit formula.

$$26) 12, 9, 6, 3, \dots$$

$$27) 4, 104, 204, 304, \dots$$

$$28) -4, 20, -100, 500, \dots$$

$$29) -4, -12, -36, -108, \dots$$

$$30) -3, 6, -12, 24, \dots$$

Answers to Ch 12 review (ID: 1)

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|---------------------------------|---|---|-----------------------------|
| 1) 350 | 2) -160 | 3) 39991 | 4) -1640 |
| 5) 15 | 6) 50 | 7) Converges | 8) Diverges |
| 9) Converges | 10) Converges | 11) Diverges | 12) Diverges |
| 13) Converges | 14) 0.6 | 15) 0.9 | 16) 4 |
| 17) No sum | 18) $\sum_{k=1}^4 5^k$ | 19) $\sum_{k=1}^5 k^2$ | 20) $a_{10} = \frac{21}{5}$ |
| 21) $a_{10} = \frac{1024}{21}$ | 22) Common Ratio: $r = -6$
$a_8 = -839808$
Explicit: $a_n = 3 \cdot (-6)^{n-1}$ | 23) Common Ratio: $r = 2$
$a_8 = 512$
Explicit: $a_n = 4 \cdot 2^{n-1}$ | |
| 24) 47 | 25) $\frac{729}{2}$ | 26) $a_n = 15 - 3n$ | 27) $a_n = -96 + 100n$ |
| 28) $a_n = -4 \cdot (-5)^{n-1}$ | 29) $a_n = -4 \cdot 3^{n-1}$ | 30) $a_n = -3 \cdot (-2)^{n-1}$ | |