Name_____

Period_____Date_____

Chapter 11 Review

Write the first four terms of the sequence whose general term is given.

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

A) 3, 6, 9, 12 B) 1, 4, 7, 10 C) -6, 3, 12, 21 D) 3, 12, 21, 30

2) $a_n = 2^n$ 2) _____

A) 4, 8, 16, 32 B) 2, 4, 8, 16 C) 1, 2, 4, 8 D) 1, 4, 9, 16

Write the first four terms of the sequence defined by the recursion formula.

3) $a_1 = 4$ and $a_n = 4a_{n-1} - 4$ for $n \geq 2$ 3) _____

A) 4, 12, 44, 172 B) 4, 20, 84, 340 C) 4, 16, 64, 256 D) 4, 12, 60, 252

4) $a_1 = -6$ and $a_n = -3a_{n-1}$ for $n \geq 2$ 4) _____

A) 6, -18, 54, -162
B) -6, 20, -56, 164
C) -6, 18, -54, 162
D) -6, -18, -54, -162

Write the first four terms of the sequence whose general term is given.

5) $a_n = \dfrac{n^5}{(n-1)!}$ 5) _____

A) $\frac{1}{0}, \frac{32}{0}, \frac{243}{2}, \frac{512}{3}$
B) $5, 10, \frac{15}{2}, \frac{10}{3}$
C) $\frac{5}{0}, \frac{10}{0}, \frac{15}{2}, \frac{10}{3}$
D) $1, 32, \frac{243}{2}, \frac{512}{3}$

6) $a_n = 2(n + 2)!$ 6) _____

A) 4, 24, 144, 960 B) 12, 96, 720, 5760 C) 12, 48, 240, 1440 D) 4, 12, 48, 240

Evaluate the factorial expression.

7) $\frac{10!}{8!}$ 7) _____

A) 10 B) 90 C) $\frac{10}{8}$ D) 2!

8) $\frac{(n+10)!}{n+10}$ 8) _____

A) $(n+9)!$ B) 1 C) $n+10!$ D) 10!

Find the indicated sum.

9) $\sum_{i=1}^{4} (3i-2)$ 9) _____

A) 10 B) 21 C) 13 D) 22

10) $\sum_{k=1}^{4} (-1)^k(k+7)$ 10) _____

A) -38 B) 2 C) 38 D) 30

Use the formula for the general term (the nth term) of an arithmetic sequence to find the indicated term of the sequence with the given first term, a_1, and common difference, d.

11) Find a_8 when $a_1 = 3$, $d = -2$. 11) _____

A) -13 B) -11 C) 19 D) 17

12) Find a_{33} when $a_1 = 3$, $d = -1$. 12) _____

A) 36 B) 35 C) -29 D) -30

Find the indicated sum.

13) Find the sum of the first 40 terms of the arithmetic sequence: 17, 24, 31, 38, . . . 13) _____

A) 6147 B) 6280 C) 6140 D) 297

14) Find the sum of the first 70 terms of the arithmetic sequence: 1, –7, –15, –23, . . . 14) _____

A) –19,250 B) –559 C) –19,241 D) –19,530

Use the formula for the sum of the first n terms of an arithmetic sequence to find the indicated sum.

15) $\sum_{i=1}^{36} (5i + 8)$ 15) _____

A) 3906 B) 3528 C) 3618 D) 3780

16) $\sum_{i=1}^{29} (-6i + 7)$ 16) _____

A) –2320 B) –2189.5 C) –2291 D) –2407

Write the first five terms of the geometric sequence.

17) $a_1 = 4;\ r = -2$ 17) _____

A) 4, 2, 0, –2, –4
B) 4, –8, 16, –32, 64
C) 4, 8, 16, –32, 64
D) –2, –8, 16, –32, 64

18) $a_1 = 6; r = 5$ 18) _____

A) 6, 30, 150, 750, 3750
B) 5, 30, 180, 1080, 6480
C) 6, 11, 16, 21, 26
D) 30, 150, 750, 3750, 18,750

Use the formula for the general term (the nth term) of a geometric sequence to find the indicated term of the sequence with the given first term, a_1, and common ratio, r.

19) Find a_6 when $a_1 = 3, r = 4$. 19) _____

A) 1024 B) 60 C) 12,288 D) 3072

20) Find a_4 when $a_1 = 2, r = -3$. 20) _____

A) 54 B) –54 C) –27 D) 162

Use the formula for the sum of the first n terms of a geometric sequence to solve.

21) Find the sum of the first five terms of the geometric sequence: 2, 6, 18, ... 21) _____

A) 242 B) 47 C) 26 D) 121

22) Find the sum of the first 11 terms of the geometric sequence: 7, 14, 28, 56, 112, ... 22) _____

A) 14,309 B) 14,331 C) 14,366 D) 14,329

Find the indicated sum. Use the formula for the sum of the first n terms of a geometric sequence.

23) $\sum_{i=1}^{5} 2 \cdot 4^i$ 23) _____

A) 264 B) 40 C) 2728 D) 5140

24) $\sum_{i=1}^{8} \left(\frac{4}{3}\right)^i$ 24) _____

A) $\frac{58,975}{2187}$ B) $\frac{235,900}{6561}$ C) $-\frac{56,788}{6561}$ D) $-\frac{14,197}{2187}$

Find the sum of the infinite geometric series, if it exists.

25) $3 + \frac{3}{4} + \frac{3}{16} + \frac{3}{64} + \ldots$ 25) _____

A) $\frac{15}{4}$ B) 4 C) $\frac{3}{4}$ D) does not exist

26) $5 - \frac{5}{4} + \frac{5}{16} - \frac{5}{64} + \ldots$ 26) _____

A) $\frac{15}{4}$ B) $-\frac{5}{4}$ C) 4 D) does not exist

Use the Binomial Theorem to expand the binomial and express the result in simplified form.

27) $(x + 3)^3$ 27) _____

A) $3x + 9$

B) $x^3 + 27$

C) $x^3 + 3x^2 + 9x + 27$

D) $x^3 + 9x^2 + 27x + 27$

28) $(4x + 2)^3$ 28) _____

A) $16x^6 + 8x^3 + 64$

B) $16x^2 + 16x + 4$

C) $64x^3 + 96x^2 + 48x + 8$

D) $64x^3 + 96x^2 + 96x + 8$

Find the term indicated in the expansion.

29) $(2x + 5)^5$; 5th term 29) _____

A) $1250x$ B) 15,625 C) $6250x$ D) $2500x^2$

30) $(x^3 + y^4)^8$; 5th term 30) _____

A) $70x^{12}y16$ B) $420x^{12}y16$ C) $70x^7y^8$ D) $420x^7y^8$