

COLLEGE ALGEBRA  
MATH 1314  
CHAPTER 8 EXAMINATION REVIEW

Name \_\_\_\_\_

SHOW ALL OF YOUR WORK AND CIRCLE YOUR ANSWERS.

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

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

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

A) 2, 6, 14, 30

B) 2, 2, 6, 14

C) 2, 2, 2, 2

D) 2, 4, 8, 16

Express the sum using summation notation with a lower limit of summation not necessarily 1 and with  $k$  for the index of summation.

2)  $3 + 6 + 9 + 12 + \dots + 33$

A)  $\sum_{k=1}^{10} 3 + 3k$

B)  $\sum_{k=0}^{24} 3 + 3k$

C)  $\sum_{k=0}^{10} 3 + 3k$

D)  $\sum_{k=1}^{10} 3k + 3$

Write the first five terms of the arithmetic sequence.

3)  $a_1 = 9; d = 2$

A) 9, 11, 13, 15, 17

B) 11, 13, 15, 17, 19

C) 9, 10, 11, 12, 13

D) 0, 9, 11, 13, 15

Write a formula for the general term (the  $n$ th term) of the arithmetic sequence. Do not use a recursion formula. Then use the formula for  $a_n$  to find the indicated term of the sequence.

4) Find  $a_{11}$ ; 0, 4, 8, ...

A) 48

B) 44

C) 40

D) 30

Find the indicated sum.

5) Find the sum of the first 30 terms of the arithmetic sequence: 5, -1, -7, -13, ...

A) -2550

B) -175

C) -2460

D) -2453

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

6) Find  $a_8$  when  $a_1 = 3000, r = -\frac{1}{2}$ .

A)  $-\frac{375}{64}$

B)  $\frac{5993}{2}$

C)  $\frac{375}{32}$

D)  $-\frac{375}{16}$

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

7) Find the sum of the first 14 terms of the geometric sequence: 4, 12, 36, 108, 324, ...

A) 9,565,936

B) 9,565,938

C) 9,565,973

D) 9,565,916

Find the sum of the infinite geometric series.

8)  $\frac{3}{5} - \frac{9}{5} + \frac{27}{5} + \dots$

A)  $\frac{3}{20}$

C)  $-\frac{6561}{5}$

B) the series has no sum

D)  $\frac{19683}{5}$

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

9)  $(3x + 4)^4$

A)  $(9x^2 + 12x + 16)^4$

C)  $324x^4 + 1728x^3 + 864x^2 + 3072x + 256$

B)  $81x^3 + 432x^2 + 864x + 768$

D)  $81x^4 + 432x^3 + 864x^2 + 768x + 256$

Find the term indicated in the expansion.

10)  $(2x + 2)^5$ ; 5th term

A)  $160x^2$

B)  $160x$

C)  $80x$

D) 160