

Trig/Precalc
Chapter 12 Review

Name: Answer Key

1. Find the 27th term in the arithmetic sequence $-8, 1, 10, \dots$
 A. 174 B. 242 C. 235 **D. 226** $-8 + (27-1)9$
2. Find the sum of the first 20 terms in the arithmetic series $14 + 3 - 8 - \dots$
 A. -195 **B. -1810** C. 195 D. 1810 $\frac{20}{2}(2(14) + (20-1)(-11))$
3. Find the 10th term in the geometric sequence $-2, 6, -18, \dots$
 A. 118,098 B. -118,098 **C. 39,366** D. -39,366 $a_{10} = -2(-3)^{10-1}$
4. Find the sum of the first five terms in the geometric series $2 - \frac{4}{3} + \frac{8}{9} - \dots$
 A. $\frac{81}{55}$ B. $\frac{13}{27}$ **C. $\frac{110}{81}$** D. $\frac{275}{81}$ $\frac{2 - 2(-\frac{2}{3})^5}{1 + \frac{2}{3}}$
5. Find the three geometric means between $-\frac{2}{3}$ and -54 .
 A. 2, 6, 18 B. -2, 6, -18 **C. 2, -6, 18** D. A or C $-\frac{2}{3}, \overset{+}{2}, \overset{+}{-6}, \overset{+}{18}, -54$
 $-54 = -\frac{2}{3}r^{5-1}$
 $r = \pm 3$
6. Find $\lim_{n \rightarrow \infty} \frac{4n^3 + 7n^2}{5n^3 - 7n^2 + 3}$
 A. $\frac{5}{4}$ B. 0 **C. $\frac{4}{5}$** D. Does Not Exist
7. Write $0.\bar{8}$ as a fraction
 $\frac{8}{10} + \frac{8}{100} + \frac{8}{1000} \dots$ $r = \frac{1}{10}$ $\frac{\frac{8}{10}}{1 - \frac{1}{10}} = \frac{8}{10} \cdot \frac{10}{9}$
 A. $\frac{88}{999}$ **B. $\frac{8}{9}$** C. $\frac{8}{99}$ D. $\frac{9}{8}$
8. Find the sum of $\frac{11}{5} - \frac{33}{55} + \frac{99}{605} - \dots$ $r = -\frac{3}{11}$ $\frac{\frac{11}{5}}{1 - (-\frac{3}{11})} = \frac{\frac{11}{5}}{\frac{14}{11}} = \frac{11}{5} \cdot \frac{11}{14} = \frac{121}{70}$
A. $\frac{121}{70}$ B. $-\frac{121}{70}$ C. $\frac{22}{7}$ D. Does Not Exist

9. Write $\sum_{k=2}^4 5\left(\frac{2}{3}\right)^k$ in expanded form and then find the sum.

A. $5\left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^2; \frac{28}{9}$

B. $\left(\frac{5 \cdot 2}{3}\right)^2 + \left(\frac{5 \cdot 2}{3}\right)^3 + \left(\frac{5 \cdot 2}{3}\right)^2; \frac{15700}{81}$

C. $5\left(\frac{2}{3}\right)^1 + 5\left(\frac{2}{3}\right)^2 + 5\left(\frac{2}{3}\right)^3; \frac{190}{27}$

D. $5\left(\frac{2}{3}\right)^2 + 5\left(\frac{2}{3}\right)^3 + 5\left(\frac{2}{3}\right)^4; \frac{380}{81}$

10. Express the series $0.7 + 0.007 + 0.00007 + \dots$ using sigma notation.

A. $\sum_{k=1}^{\infty} 0.7(10)^{k-1}$

B. $\sum_{k=1}^{\infty} 7(10)^{1-2k}$

C. $\sum_{k=1}^{\infty} 7(10)^{1-k}$

D. $\sum_{k=1}^{\infty} 0.7(10)^{-k}$

11. Express the series $5 + 9 + 13 + \dots + 101$ using sigma notation.

A. $\sum_{k=1}^{\infty} (4k + 1)$

B. $\sum_{k=1}^{25} (4k + 1)$

~~C.~~ $\sum_{k=1}^{25} (4k - 1)$

D. $\sum_{k=1}^{24} (4k + 1)$

12. Express the series $\frac{3 \cdot 9}{10} + \frac{3 \cdot 11}{12} + \frac{3 \cdot 13}{14} + \dots + \frac{3 \cdot 23}{24}$ using sigma notation.

A. $\sum_{k=5}^{12} \frac{3(2k-1)}{2k}$

~~B.~~ $\sum_{k=5}^{\infty} \frac{3(2k-1)}{2k}$

C. $\sum_{k=1}^8 \frac{3 \cdot 3k}{8+2k}$

~~D.~~ $\sum_{k=1}^{\infty} \frac{3 \cdot 3k}{8+2k}$