

Precalculus

9-10 Test Review

- 1) Write the explicit equation for the arithmetic sequence given $a_{11} = 80$ and $a_{30} = 251$.

- 2) Write the explicit equation for the geometric sequence given $a_2 = -15$ and $a_5 = -1875$.

- 3) Find the next 2 terms in the sequence. Then write the recursive and explicit formulas.
 - a) 4, 9, 14, ...
 - b) 1000, 800, 640, ...

- 4) Write the following series in summation notation. Then Evaluate the series.
 - a) $-1 + 3 + 7 + 11 + \dots + 39$

 - b) $2 + 6 + 18 + \dots + 118098$

 - c) $64 + 16 + 4, + \dots$

 - d) $2 + 5 + 10 + 17 + 26 + \dots n = 7$

5) Find the number of terms in the series given the following.

a) $a_1 = 18, d = 3, S_n = 363$

b) $a_1 = 2, r = 4, S_n = 10922$

6) Find the sum of the series.

a) $a_n = (-1)^{n-1} \cdot 3a_{n-1}$
for 4 terms given $a_1 = 3$

b) $\sum_{n=3}^5 (2^{n-1} + 4n)$

c) $\sum_{n=1}^8 243 \left(\frac{1}{3}\right)^{n-1}$

d) $\sum_{n=3}^{15} (4n - 3)$

7) Determine if the series converges. If so, find the sum.

a) $\sum_{k=1}^{\infty} 4 \left(\frac{3}{4}\right)^{k-1}$

b) $\frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \dots$

c) $\sum_{k=1}^{\infty} 3 \left(\frac{5}{2}\right)^k$

8) A ball is dropped from 25 feet off the ground. The ball rebounds 70% of its previous height after each bounce.

a) Write an explicit rule that models the context.

b) How high does the ball rebound after the sixth bounce?

c) How many bounces will occur before the ball rebounds less than a foot?

d) What is the total distance the ball travels before it rolls away?

9) Expand the following;

a) $(3x^2 - 1)^5$

b) $(4a^4 + b)^4$

10) Find the third term in $(2b - 3)^4$.

11) Find the coefficient of y^2 in $(4 - y)^3$

12) Find the 5th term in $(1 + 4y^3)^{10}$

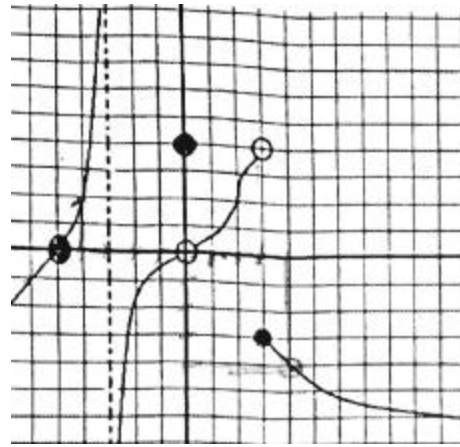
Evaluate.

13) $f(0) =$

14) $\lim_{x \rightarrow 0} f(x) =$

15) $\lim_{x \rightarrow -3^+} f(x) =$

16) $\lim_{x \rightarrow -3^-} f(x) =$



17) $\lim_{x \rightarrow -3} f(x) =$

18) $\lim_{x \rightarrow 3^+} f(x) =$

19) $\lim_{x \rightarrow 3^-} f(x) =$

20) $\lim_{x \rightarrow 3} f(x) =$

21) $f(-3) =$

22) $f(3) =$

23) $f(4) =$

24) $\lim_{x \rightarrow 4} f(x) =$

25) $\lim_{x \rightarrow -4^-} f(x) =$

26) $\lim_{x \rightarrow -4^+} f(x) =$

27) $\lim_{x \rightarrow -4} f(x) =$

28) $f(-4)$

Evaluate each limit.

29) $\lim_{x \rightarrow -2} \frac{x^2 - 4}{x + 2}$

30) $\lim_{x \rightarrow 4} \frac{\sqrt{x} - 2}{x - 4}$

31) $\lim_{x \rightarrow \infty} \frac{3 - 4x^2}{x^2 + 3x + 2}$

32) $\lim_{x \rightarrow 2} \frac{x - 2}{x^3 - 8}$

33) $\lim_{x \rightarrow -1} \left(-\frac{x^2}{2} - 3x + \frac{1}{2} \right)$

34) $\lim_{x \rightarrow -3} \frac{x}{\frac{1}{3+x} - \frac{1}{3}}$

35) If $f(x) = \begin{cases} 2x - 9, & x \leq 3 \\ -1, & x > 3 \end{cases}$, evaluate each of the following;

a) $\lim_{x \rightarrow 3^+} f(x) =$

b) $\lim_{x \rightarrow 3^-} f(x) =$

c) $\lim_{x \rightarrow 3} f(x) =$

d) $f(3) =$

e) $f(5) =$

f) $f(-2) =$