

Name _____ DUE DATE: _____

Directions:

- Read each problem carefully and use your knowledge of mathematics to determine your answer.
- In order to receive FULL CREDIT you must either SHOW ALL WORK or EXPLAIN how you got your answer!! PLEASE NOTE: A multiple choice answer alone without any work will only receive half credit.

Question	Your Work/Explanation
<p>1) Use sigma notation to write the sum:</p> $\frac{2}{1} + \frac{3}{2} + \frac{4}{3} + \cdots + \frac{7}{6}$ <p>(a) $\sum_{n=1}^7 \frac{n}{n-1}$ (b) $\sum_{n=1}^6 \frac{n+1}{n}$</p> <p>(c) $\sum_{n=2}^n \frac{n}{n-1}$ (d) $\sum_{n=1}^7 \frac{n}{n+1}$</p>	
<p>2) Let $f(x) = \begin{cases} x^2 - 1 & \text{if } x \neq 1 \\ 4 & \text{if } x = 1 \end{cases}$</p> <p>Which of the following statements are true?</p> <p>I. $\lim_{x \rightarrow 1} f(x)$ exists II. $f(1)$ exists</p> <p>III. f is continuous at $x = 1$</p> <p>(a) only I (b) only II</p> <p>(c) I and II (d) all of them</p>	

3) Multiply: $\frac{1}{x+y} \left(\frac{x}{y} + \frac{y}{x} \right)$

(a) $\frac{1}{y} + \frac{1}{x}$

(b) 1

(c) $\frac{x+y}{xy}$

(d) $\frac{x^2 + y^2}{xy(x+y)}$

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

(a) 0 (b) 1 (c) $-\frac{1}{2}$ (d) ∞

5) Find the first five terms of the geometric sequence with $a_1 = 2$ and $r = -\frac{2}{3}$.

6) Which of the following is *not* a correct representation for the point $\left(2, \frac{5\pi}{6} \right)$?

(a) $\left(-2, -\frac{\pi}{6} \right)$

(b) $\left(-2, \frac{11\pi}{6} \right)$

(c) $\left(2, -\frac{11\pi}{6} \right)$

(d) $\left(2, -\frac{7\pi}{6} \right)$

<p>7) Find $\lim_{x \rightarrow 0} \frac{\sin x}{x^2 + 3x}$</p> <p>(a) 1 (b) $\frac{1}{3}$ (c) 3 (d) ∞</p>	
<p>8) Eliminate the parameter and find a corresponding rectangular equation for $x = 3t^2$ and $y = 2t + 1$.</p>	
<p>9) Find the vertical asymptotes for the graph of the function</p> $f(x) = \frac{x^3 - 3x^2 + x - 3}{x^4 - 1}$	
<p>10) If $\lim_{x \rightarrow c} f(x) = -\frac{1}{2}$ and $\lim_{x \rightarrow c} g(x) = \frac{3}{2}$, find the $\lim_{x \rightarrow c} \frac{f(x)}{g(x)}$.</p> <p>(a) $\frac{1}{6}$ (b) $-\frac{1}{3}$</p> <p>(c) 1 (d) does not exist</p>	

11) Solve for x : $\frac{2x - 5}{x - 3} = \frac{4x + 1}{x}$

12) Simplify: $\frac{\frac{1}{x} + \frac{7}{x+1}}{\frac{1}{x^2 - 1}}$

