

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
1) How is the series $1 - 2 + 4 + \dots + 64$ written in sigma notation? a) $\sum_{n=1}^{10} (-1)^n n^3$ b) $\sum_{n=0}^8 (-1)^n n^3$ c) $\sum_{n=1}^7 (-2)^{n-1}$ d) $\sum_{n=1}^7 n^3$	
2) An angle of $\frac{7\pi}{6}$ on the unit circle has coordinates of a) $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$ b) $(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$ c) $(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$ d) $(-\frac{1}{2}, \frac{\sqrt{3}}{2})$	
3) The population of a bacterial culture doubled in eight hours. What was the exponential growth rate?	

4) Find the vertical asymptote(s):

$$f(x) = \frac{2x + 6}{x^2 - 9}$$

- a) $x = 3$
- b) $x = -2, x = -3, x = 3$
- c) $x = -3, x = 3$
- d) $y = 0, x = -2$

5) What is t_1 for the geometric sequence for which $t_8 = -160$ and $t_3 = 5$?

- a) $-\frac{5}{4}$
- b) $\frac{5}{4}$
- c) 2
- d) -2

6) If $\cos 2\theta = \frac{\sqrt{3}}{2}$, where 2θ is an *acute angle*, which is the exact value of θ ?

- a) $\frac{\pi}{3}$
- b) $\frac{\pi}{2}$
- c) $\frac{\pi}{6}$
- d) $\frac{\pi}{12}$

7) Solve for x : $32^{\frac{3}{4}-x} = 16^{5-3x}$

8) The value of the expression $e^{\frac{1}{2}\ln 16}$ is

- a) 4 b) 8 c) $\ln 4$ d) e^4

9) Which of the following is equivalent to

$$\frac{\cos x - \cos^3 x}{\sin^3 x} ?$$

- a) $\cos x$ b) $\cos x - \cot^3 x$
c) $\cot x$ d) $\cot^3 x$

10) The expression $6e^{x-\ln 2}$ is equivalent to

- a) $12e^x$
b) $\frac{1}{2}e^x$
c) $3e^x$
d) $\frac{6e^x}{\ln 2}$

11) Find the partial fraction decomposition

$$\text{for } \frac{x+2}{x^2-1} = \frac{A}{x+1} + \frac{B}{x-1}$$

12) Solve the following equation:

$$\log_2(x - 3) + \log_2(x + 1) = 5$$

