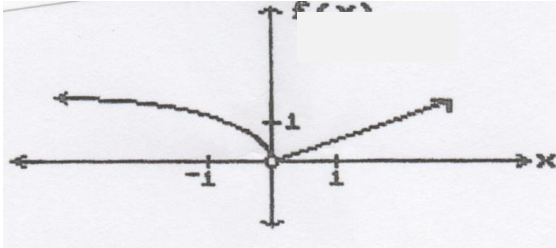


Name _____ DUE DATE: _____

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) Determine the limit graphically, if it exists: $\lim_{x \rightarrow 0} f(x)$</p>  <p>(a) -1 (b) 0 (c) 1 (d) Does not exist</p>	
<p>2) Find $\lim_{x \rightarrow 0} \frac{\sin 3x}{4x}$</p> <p>(a) 1 (b) $\frac{4}{3}$ (c) $\frac{3}{4}$ (d) 0</p>	
<p>3) Find the rectangular coordinates of the point with the given polar coordinates. $(10, -\frac{4\pi}{3})$</p> <p>(a) $(5\sqrt{3}, 5)$ (b) $(-5, 5\sqrt{3})$ (c) $(5, 5\sqrt{3})$ (d) $(-5\sqrt{3}, -5)$</p>	

4) If $f(x) = \begin{cases} x^2 - x & \text{for } x \neq 1 \\ k & \text{for } x = 1 \end{cases}$, and if f is continuous at $x = 1$, then $k =$

- (a) -1 (b) $-\frac{1}{2}$ (c) 0 (d) $\frac{1}{2}$

5) Simplify: $\frac{\sqrt{x} + \frac{6}{\sqrt{x}}}{\sqrt{x}}$

- (a) $\frac{6}{x}$ (b) $1 + 6\sqrt{x}$
(c) $\frac{x + 6\sqrt{x}}{x}$ (d) $\frac{x + 6}{x}$

6) Solve for x : $\frac{3x+2}{5} - \frac{6x+4}{3} = \frac{14}{3}$

7) An initial deposit of \$2800 is made in a savings account for which the interest is compounded continuously. The balance will triple in 8 years. What is the annual rate of interest, to the *nearest tenth* of a percent, for this account?

8) Find the partial fraction decomposition

for: $\frac{7}{3x^2 + 5x - 2}$

9) If $\lim_{x \rightarrow c} f(x) = -6$ and $\lim_{x \rightarrow c} g(x) = 3$,
then find

$$\lim_{x \rightarrow c} ([f(x)]^2 - 2f(x)g(x) + [g(x)]^2)$$

- (a) 63 (b) 81 (c) 45 (d) -9

10) Find the slope of the normal line to the
indicated curve at the given point.

$$y = 3x^2 - 1 \text{ at } (-1, 2)$$

- (a) -6 (b) 6 (c) $-\frac{1}{6}$ (d) $\frac{1}{6}$

11) Divide: $(3x^4 + 2x^3 + 6x^2 + 7x + 5) \div (x^2 + 1)$

12) Find $\lim_{x \rightarrow 0} \frac{\frac{1}{x+7} - \frac{1}{7}}{2x}$

