CHAPTER 2 CALCULUS TEST (PART I) NAME _____

(PROBLEM 1)

EVALUATE $\lim_{x \to -3} \dfrac{x^2 - 9}{x+3}$

(PROBLEM 2)

EVALUATE $\lim_{x \to 3} \dfrac{\dfrac{x}{x+2} - \dfrac{3}{5}}{x-3}$

(PROBLEM 3)

EVALUATE $\lim_{\Delta x \to 0} \dfrac{(x+\Delta x)^2 - 2(x+\Delta x) + 1 - (x^2 - 2x + 1)}{\Delta x}$

(PROBLEM 4)

EVALUATE $\lim_{x \to 0} \dfrac{x}{\sin 3x}$

(PROBLEM 5)

EVALUATE $\lim_{x \to 3} \dfrac{\sqrt{x+1} - 2}{x-3}$

(PROBLEM 6)

EVALUATE $\lim_{\theta \to 0} \dfrac{\sec \theta - 1}{\theta \sec \theta}$

(PROBLEM 7)

EVALUATE $\lim_{x \to 0} \dfrac{\sin 4x}{5x}$

(PROBLEM 8) EVALUATE

$\lim_{x \to 0^+} \left(x - \dfrac{1}{x^3} \right)$

FOR EACH OF THE FOLLOWING FIND ANY DISCONTINUITIES (IF ANY), GRAPH THE FUNCTION, AND FIND THE INDICATED LIMITS

PROBLEM 9)

$$f(x) = \frac{|x-5|}{x-5}$$

a) $\lim_{x \to 5^+}$

b) $\lim_{x \to 5^-}$

c) $\lim_{x \to 5}$

PROBLEM 10)

$$f(x) = \begin{cases} \dfrac{x^2-5x-14}{x+2}, & x \leq 7 \\ \sqrt{x-7}+1, & x > 7 \end{cases}$$

a) $\lim_{x \to 7^+}$

b) $\lim_{x \to 7^-}$

c) $\lim_{x \to 7}$

PROBLEM 11)

$$f(x) = \begin{cases} x^2+2, & 0 \leq x \leq 2 \\ x+2, & x < 0 \\ -3x+12, & 2 < x < 5 \\ \sqrt{x-5}-3, & x \geq 5 \end{cases}$$

a) $\lim_{x \to 0}$

b) $\lim_{x \to 2}$

c) $\lim_{x \to 5}$

D) $\lim_{x \to -5}$

E) $\lim_{x \to 9}$

F) $\lim_{x \to 4}$