Name_____

Quiz 2.1 and 2.2

September 10, 2012

No Calculator Multiple Choice 8 questions – 16 minutes

Write legibly your choice to the left of the question

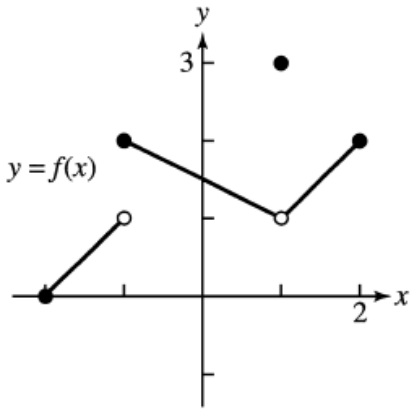
1. Determine $\lim_{x \to 3} (5 - 2x + x^2)$ by substitution.

(A) 2 (B) 8 (C) 10 (D) 12 (E) 20

2. Find $\lim_{x \to 5} \dfrac{5 - 6x + x^2}{5 - x}$, if it exists.

(A) -4 (B) 0 (C) 4
(D) 6 (E) Does not exist

3. For the function $y = f(x)$ whose graph is shown below, which statement is false?



(A) $\lim_{x \to 1} f(x) = 1$
(B) $\lim_{x \to 2} f(x) = 2$
(C) $\lim_{x \to 0^+} f(x) = \lim_{x \to 0} f(x)$
(D) $\lim_{x \to -1} f(x) = 2$
(E) $\lim_{x \to -1^+} f(x) = 2$

4. Let $f(x) = \begin{cases} x^2 - 2, & x < 1 \\ -\frac{1}{2}x + 1, & x \geq 1 \end{cases}$. What is $\lim_{x \to 1^+} f(x)$?

(A) -1 (B) $\frac{1}{2}$ (C) 1

(D) 1.73 (E) Does not exist

5. Find $\lim_{x \to 3^+} \frac{x + 3}{x - 3}$

(A) $-\infty$ (B) -6 (C) 0 (D) 6 (E) ∞

6. Which of the following is a horizontal asymptote for $f(x) = \frac{6x^2 + 2x - 4}{2x^2 + 3x + 2}$?

(A) $y = -3$ (B) $y = -2$ (C) $y = 2$

(D) $y = 3$ (E) $y = 4$

7. Find $\lim_{x \to \infty} \dfrac{6x + 1}{|6 - 2x|}$

(A) -3 (B) 0 (C) 1 (D) 3 (E) Does not exist

8. Which of the following is a right end behavior model for $y = x^3 - e^{-x}$?

(A) $-x^3$ (B) x^3 (C) $-e^{-x}$ (D) e^{-x} (E) e^x

Name_____

Quiz 2.1 and 2.2

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Calculator Multiple Choice 3 questions – 9 minutes

Clearly circle the best answer.

9.

Find the limit.

1) $\lim_{x \to -\pi} \sqrt{x + 8} \cos(x + \pi)$

A) 1 B) $\sqrt{8 - \pi}$ C) 0 D) $-\sqrt{8 - \pi}$

10.

Give an appropriate answer.

2) Let $\lim_{x \to -8} f(x) = 8$ and $\lim_{x \to -8} g(x) = 3$. Find $\lim_{x \to -8} [f(x) - g(x)]$.

A) 8 B) 5 C) –8 D) 11

11.

Find the limit.

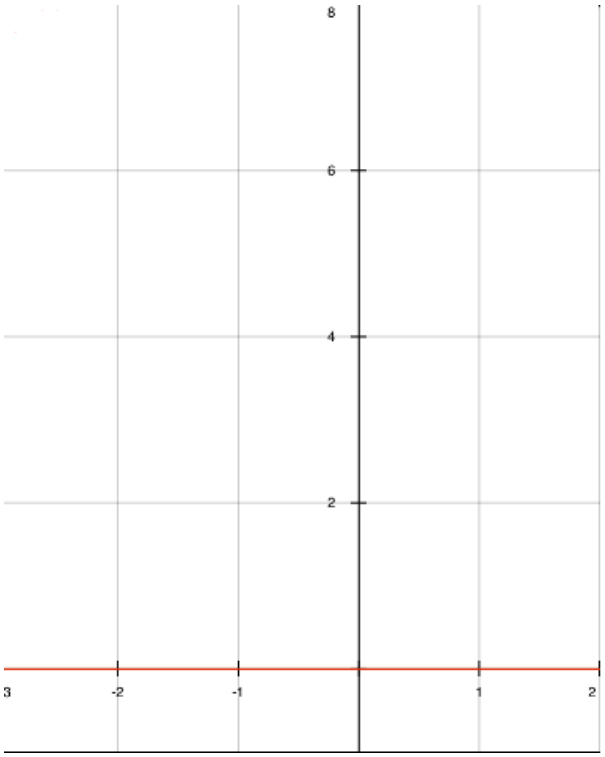
3) $\lim_{x \to 3} \dfrac{x^2 - 9}{\sqrt{x^2 + 7} - 4}$

A) $\frac{1}{4}$ B) 8 C) 3 D) 4

Part III Calculator Allowed Free Response Questions. Show set up but no need to show each calculation. Also don't forget to use appropriate limit notation as needed.

12. Let *f* be the function given by $f(x) = 2xe^{2x}$.

(a) Sketch the graph of *f* in the viewing window [-3, 2] by [-1, 8]



(b) Find *f(-1)* and *f(0.5)* .

(c) Find $\lim_{x\to-\infty} f(x)$ and $\lim_{x\to\infty} f(x)$.

(d) Give any horizontal asymptotes of *f*.

13. Brendan drives along Route 10 in his new Fred Flintstone Special. His distance from home is modeled by the function

$$F(t) = 10t^2 - 9t \text{ for } 0 \le t \le 10,$$

where *F(t)* is measured in feet and *t* is measured in minutes.

(a) Find *F(2)* and *F(10).* Indicate units of measure.

(b) What is the average rate of change of the traffic flow over the time interval $2 \le t \le 10$? Indicate units of measure.

(c) What is the instantaneous rate of change in the number of cars at t = 10? Indicate units of measure. Show work. Don't forget the limit expression!