

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

Practice

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

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

$$5 - 2(3) + 9$$

$$5 - 6 + 9 = 8$$

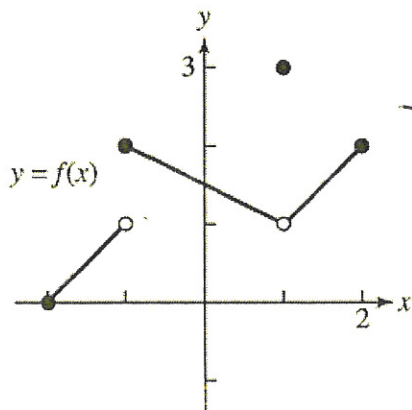
2. Find $\lim_{x \rightarrow 5} \frac{5 - 6x + x^2}{5 - x}$, if it exists.

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

$$\frac{5 - 30 + 25}{5 - 5} = \frac{0}{0}$$

$$\frac{(x-5)(x-1)}{-(x-5)}$$

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



(A) $\lim_{x \rightarrow 1^-} f(x) = 1$ ✓

(B) $\lim_{x \rightarrow 2} f(x) = 2$ ✓

(C) $\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^-} f(x)$ ✓

(D) $\lim_{x \rightarrow -1} f(x) = 2$ ✗

(E) $\lim_{x \rightarrow -1^+} f(x) = 2$ ✓

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

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

$$\frac{6x+1}{6}$$

$$\frac{6x}{2x}$$

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

$$2 - \frac{x}{x+1}$$

$$\left(\frac{2(x+1) - x}{x+1} \right) \left(\frac{x^2}{x+1} \right)$$

$$\frac{2x+2-1}{x+1} = \frac{2x+1}{x+1}$$

$$= \frac{x^2}{x+1}$$

$$\frac{2(x+1)}{(x+1)(x+1)} = \frac{2}{x+1}$$

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

(A) -1

(B) $\frac{1}{2}$

(C) 1

(D) 1.73

(E) Does not exist

$-\frac{1}{2}(\text{almost } 1) + 1$

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

$\frac{6}{\text{small} + \#}$

(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) $y = 4$

Same power

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Calculator Multiple Choice 3 questions – 9 minutes

Clearly circle the best answer.

9.

Find the limit.

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

A) 1

B) $\sqrt{8-\pi}$

C) 0

D) $-\sqrt{8-\pi}$

$\sqrt{8-\pi} \cos 0$

10.

Give an appropriate answer.

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

A) 8

B) 5

C) -8

D) 11

$8 - 3$

11.

Find the limit.

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

A) $\frac{1}{4}$

B) 8

C) 3

D) 4

$\frac{x^2 - 9}{\sqrt{x^2 + 7} - 4}$

$\frac{\frac{a}{\sqrt{a+7}}}{\frac{\sqrt{x^2+7} + 4}{(\sqrt{x^2+7} + 4)}}$

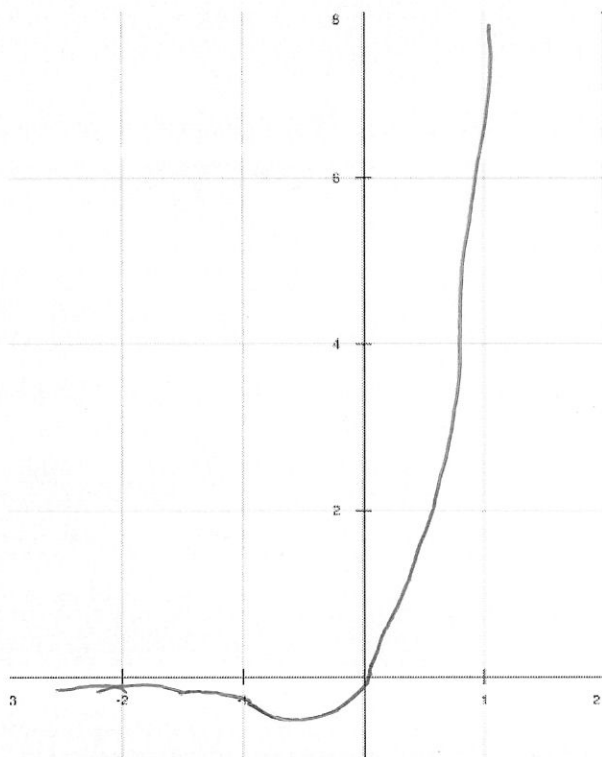
$\frac{\cancel{(x^2-9)}(\sqrt{x^2+7} + 4)}{x^2 + 7 - 16}$
 $\frac{\cancel{x^2-9}}{x^2-9}$

$\sqrt{16} + 4$

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 $f(0.5)$.

-2.71

2.72

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

0

∞

(d) Give any horizontal asymptotes of f .

$y = 0$