Math 1314 ONLINE
Alternate Assignment 4

Record your answers to these questions on the Alternate Assignment 4 answer sheet and upload your answers to the Alternate 4 slot on the "Assignments" tab at casa.uh.edu. This assignment is due on Saturday, February 9, 2013, at 11:59 p.m. All work must be submitted electronically. Late work will not be accepted.

1. What is the form $\frac{0}{0}$ called?
2. Suppose you want to find $\lim_{x \to 1} \frac{x^2 - 3x + 2}{x^2 - 1}$. Describe the procedure that you could use to find the limit. Then state the answer.
3. Find the limit: $\lim_{x \to 0} \frac{\sqrt{x+16} - 4}{x}$.
4. Find the limit: $\lim_{x \to \infty} \frac{x^2 - 6x + 8}{2x^2 - 8}$
5. Find the limit: $\lim_{x \to \infty} \frac{3x}{3x^2 - 27}$
6. We sometimes write the answer to a limit at infinity problem as infinity or negative infinity. What does this mean?
7. If $f(x) = x^5 - 7x^3 + 8x - 6$, what is the degree of the polynomial?
8. Explain why $\lim_{x \to 3} \frac{x^2 - 4x + 5}{x^2 + 2x + 7}$ is not equal to 1.
9. If $\lim_{x \to a^+} f(x) = \lim_{x \to a^-} f(x)$, what do you know about $\lim_{x \to a} f(x)$?
10. If $f(x) = \begin{cases} 2x + 5, & x > 1 \\ 4x - 3, & x \le 1 \end{cases}$, find $\lim_{x \to 1^-} f(x)$, $\lim_{x \to 1^+} f(x)$ and $\lim_{x \to 1} f(x)$.
11. Evaluate $\lim_{x \to \infty} \frac{123500}{x}$.
12. Name three types of discontinutites.
13. Suppose $f(0) = 6$ and $\lim_{x \to 0} f(x) = 3$. Is *f* continuous at $x = 0$? Explain your answer.
14. Write $x \le -1$ using interval notation.
15. State the intervals on which $f(x) = 6x^3 - 8x^2 + 11x + 9$ is continuous.
16. Suppose $f(x) = 3x^2 + 4x - 5$. Find $f(x+h)$.
17. Suppose $f(x) = 3x^2 + 4x - 5$. Find $f(x+h) - f(x)$.
18. Suppose $f(x) = 3x^2 + 4x - 5$. Find $\frac{f(x+h) - f(x)}{h}$.

19. Suppose $f(x) = 3x^2 + 4x - 5$. Find $\lim_{h \to 0} \left(\frac{f(x+h) - f(x)}{h} \right)$.

20. Suppose $f(x) = 3x^2 + 4x - 5$. Find $f'(-3)$.