

10/8/2001
Dr. Lunsford

MA303 Calculus I
Quiz 10

Name: _____
(20 Points Total)

Take Home Quiz. Due 10/15/2001 – beginning of class. You are not to receive any outside assistance on this quiz other than from your textbook or me. Students who have collaborated will receive a score of zero. NEATLY show all of your work on separate paper. Please attach your work to this sheet.

Use $f(x) = \frac{x^2 - 2x + 1}{x + 1}$ to answer the following:

- (a) What is the domain of f ?
- (b) What are the zeros (if any) of f ?
- (c) On what intervals is f continuous?
- (d) Find all vertical asymptotes of f (if any). Justify your answer.
- (e) Find all horizontal asymptotes of f (if any). Justify your answer.
- (f) Find all critical points of f .
- (g) Construct a first derivative sign chart for f .
- (h) Use the first derivative sign chart to determine all intervals on which f is increasing or decreasing.
- (i) Construct a second derivative sign chart for f .
- (j) Use the second derivative sign chart to determine all intervals on which f is concave up or concave down. Also find all (if any) inflection points of f .
- (k) Determine all relative extrema of f . Justify your answers!
- (l) Use the information above to draw an accurate graph of f showing all extrema and proper concavity. Note: When graphing, the y axis need not be the same scale as the x axis.