MATH 133 – Calculus with Fundamentals 1
Quiz 3 – October 1, 2015

Your Name: _____

Directions

Do all work in the spaces provided below and on the back. There are 30 total points possible.
You may use a calculator (but not any graphing features).

Questions

1) An object moves along a straight line path with position given by $x(t) = 2t^2 - t + 4$ (t in
   seconds, x in feet).

   (a) (5) What is the average velocity of the object over the interval $[1, 4]$ of t-values?

   (b) (5) The following table gives average velocities computed over the indicated intervals.
   Using this information, estimate the *instantaneous velocity* at $t = 1$.

interval	$[1, 1.5]$	$[1, 1.05]$	$[1, 1.005]$	$[1, 1.0005]$
ave.vel.	4	3.1	3.01	3.001

   Instantaneous velocity:

1

2) (10) Complete the following table and use your results to determine an estimate of the limit $\lim_{x \to 2} \dfrac{x-2}{x^2 - 3x + 2}$. Use at least 5 decimal places in all calculations for these.

x	2.1	2.01	2.001	1.999	1.99	1.9
$\dfrac{x-2}{x^2 - 3x + 2}$						

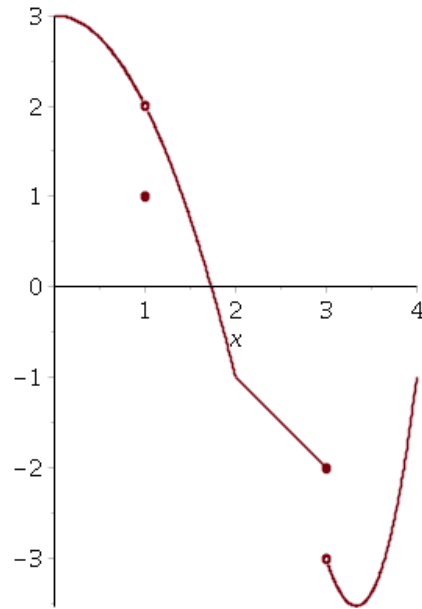$$\lim_{x \to 2} \dfrac{x-2}{x^2 - 3x + 2} \doteq \underline{\hspace{3cm}}$$

Figure 1: Figure for Question 3

3) Refer to the graph in Figure 1 and fill in the answers to these questions.

(a) (5) From the graph, $\lim\limits_{x \to 1} f(x) =$ _____.

(b) (5) From the graph, $\lim\limits_{x \to 3^+} f(x) =$ _____ and $\lim\limits_{x \to 3^-} f(x) =$ _____. Does $\lim_{x \to 3} f(x)$ exist? _____