Quiz 1 (100 points)   Due in class 6/1/2018   Name:

NOTE: YOU MUST SHOW YOUR WORK TO RECEIVE FULL CREDIT. REMEMBER TO BOX YOUR FINAL AN-SWER(S), AND ROUND TO 4 DECIMAL PLACES UNLESS OTHERWISE STATED.

1. (30 pts) Compute $\lim_{t \to 0} \frac{\sqrt{t^2+9}-3}{t^2}$ by hand. (Hint: Use $\sqrt{t^2+9}+3$ and $a^2 - b^2 = (a+b)(a-b)$)

2. (35 pts) Where is $f(x) = \frac{x}{x^3-x}$ undefined? Which of these x values are the locations of vertical asymptotes? At which of the undefined points does the limit exist? If the limit exists for any of the undefined points, find the limit of f(x) at that point? (Hint: Think about the last example in the Section 3.1 Notes.)

3. (5 pts) What is the domain of $\sqrt{x-5}$? Show all work.

4. (10 pts) What is the domain of $\frac{1}{x^2-11x+30}$? Show all work.

5. (20 pts) What is the domain of $\frac{\sqrt{x-5}}{x^2-11x+30}$? Show all work.

6. (Bonus 5 pts) Write down a function that is equal to $f(x) = 2x+3$ at every point except $x = 3$. Make the function undefined at $x = 3$.