Math 220 (section AD?) **Quiz 3** **Spring 2019**

Name _____

- 20 minutes
- No calculators
- Show sufficient work

We will learn l'Hospital's Rule and other shortcuts for obtaining limits later. For now you are not allowed to use these approaches.

1. (2 points) Evaluate $\csc(2\arctan(2/3))$.

2. (2 points) Write an equation for each vertical asymptote on the graph of the given function. Use limits to justify your answer.

$$f(x) = \frac{10x^2 - 90}{x^2 - 8x + 15}$$

3. (2 points each) Evaluate the following limits. For infinite limits, you must clearly show whether the limit is ∞ or $-\infty$.

   (a) $\lim_{x \to 0^+} \left(\ln(2x) - \ln\left(x^3 + 5x\right) \right)$

   (b) $\lim_{x \to 0^+} \dfrac{4e^x + 5}{3 - 3e^x}$

(c) $\lim_{x \to 10} \dfrac{x - 10}{\sqrt{x - 6} - 2}$