Directed Study in Mathematics Name _____

3.5 Indeterminate Forms and L'Hôpital's Rule Date _____ Pd _____

Required reading:

- Larson 9e: pages 572-575 (starting after Example 3)
- Dawkins: Calculus I, section 4-10: L'Hospital's Rule and Indeterminate Forms
  http://tutorial.math.lamar.edu/Classes/CalcI/LHospitalsRule.aspx
  - Notes: Read all, starting with Example 2. (Last modified: 11/05/2018)
  - Practice Problems: Review Problems 7-11. (Last modified: 02/20/2018)

Required homework:

- Larson 9e: page 576, problems 46, 47, 50, 51, 53, 55, 57, 59, 61 (parts a and b only)

Additional comments regarding this topic:

Indeterminate forms and L'Hôpital's Rule are nothing new; we saw this topic in AP Calculus BC. But in that class, we restricted ourselves only to cases with the indeterminate forms $0/0$ and ∞/∞. The purpose of this lesson is to investigate other indeterminate forms, such as $0\cdot\infty$, 1^{∞}, ∞^{0}, 0^{0}, and $\infty-\infty$.

Remember to show the indeterminate form correctly. In AP Calculus BC, we showed the limit of the numerator and the limit of the denominator separately. We must do the same for each component of the product, exponential, or difference.

The strategy for 1^{∞}, ∞^{0}, and 0^{0} requires the use of logarithmic differentiation, which was covered in quarter 2.