NAME

Due: At the beginning of your discussion class on Friday 10/19/18

Instructions. This quiz will be graded for accuracy, out of 10 points. All work written on this quiz must be your own. Make sure to show all your work for full credit. For every 5 minutes late the quiz is turned in, 1 point will be deducted from the final score.

1. (3 points) Find \( \lim_{x \to \infty} (10e^{3x} + 8)^{5/x} \)
2. **(4 points)** Consider the following function, \( f(x) = \frac{x - 5}{e^x} \)

(a) Where is \( f(x) \) equal to 0 or undefined? Where is \( f(x) \) positive, negative?

(b) What are the horizontal and vertical asymptotes of \( f(x) \)?

(c) Where are the critical points of \( f(x) \)? Where is \( f(x) \) increasing, decreasing?

(d) Where is \( f''(x) = 0 \)? Where is \( f(x) \) concave up, concave down? What, if any, are the inflection points of \( f(x) \)?
3. (3 points) A boat leaves a dock at 5:00 PM and travels due south at a speed of 5 km/h. Another boat has been heading due east at 10 km/h and reaches the same dock at 6:00 PM. At what time after 5:00 PM were the two boats closest together?