

Homework 7

Math 147, Fall 2017

This homework is due on Thursday, October 12.

0. Read Sections 4.4 and 4.5.
1. Which of the following functions can you differentiate using the Power Rule: x^x , 5^x , x^5 , e^x , x^e ? Explain your answer.
2. Compute the derivative of $x^{100}(x-1)^{10}(1-x)^{10}$.
3. An ant is walking around the unit circle. Let $\theta(t)$ denote the angle of the ant at time t . Let $(x(t), y(t))$ denote the position of the ant at time t .
 - (a) State an expression for $x'(t)$ in terms of $\theta(t)$.
 - (b) State an expression for the second derivative $y''(t)$ in terms of $\theta(t)$.
4. Section 4.4 # 14, 36, 46, 52, 58, 64, 70, 86
5. Section 4.5 # 28, 52, 64
6. (These problems are *not* to be turned in!)
 - (a) Section 4.4 # 5, 9, 21, 33, 35, 41, 45, 47, 51, 55, 61, 69, 77, 85, 87
 - (b) Section 4.5 # 5, 9, 23, 27, 29, 39, 43, 59, 63, 67