Math 205 Assignment #4 Due: February 6, 2015

- 1. A telephone cable hangs between two poles that are 14 m apart and has the shape of a *catenary curve* given by the equation $y = 20 \cosh(x / 20) 15$ where x and y are measured in meters. Sketch the graph of this, putting the lowest point of the curve at x = 0 and find the slope that the cable makes where it meets the pole on the right side. How much does the cable sag? (5 marks)
- Use the exponential form of sinh(x) and cosh(x) to help prove the identity sinh(x + y) = sinh(x)cosh(y) + sinh(y)cosh(x) (5 marks)
- 3. Question #8, pg 167 from the 6th edition of your text Hughes-Hallett or HH (**3** marks)
- 4. Question #27, pg 168 from the 6th edition of HH (5 marks)
- 5. Complete the following integrals taken from pg 360 in HH. Do NOT use integral tables or online tools but be sure to show the steps and substitutions that you used:
 - a. #18 (3 marks)
 - b. #26 (3 marks)
 - c. #30 (3 marks)
 - d. #46 (3 marks)