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| Assessment 1Dusty Wilson Math 163 No work = no credit **No CAS Calculators** | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Suppose a contradiction were to be found in the axioms of set theory. Do you seriously believe that a bridge would fall down?* Frank Ramsey 1903 – 1930 (English mathematician) |

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| Warm-ups (1 pt each): | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(1 pt) In addition to infinity, one of the topics in the philosophy of math is called “axiomatic set theory.” According to Ramsey (above), how seriously ought we be concerned by the possibility of a contradiction arising in set theory? Answer using complete English sentences.

(8 pts) Answer the following:

1. Find the equation of the sphere that passes through the point  and is centered at the point 
2. Write the inequality that describes the spherical solid whose surface includes the point  that is centered at the point 

(10 pts) If  and , find the following.

1. 
2.  and express the result in terms of  and 
3. 
4. 
5. Find a unit vector in the same direction as 

(4 pts) Ropes 3 ft and 5 ft in length are fastened to a Texas Star that is suspended over a town square. The star has a mass of 4 lbs. The ropes, fastened at different heights, make angles of 52° and 40° with the horizontal. Find the tension in each rope and the magnitude of each tension. (Round your answers to two decimal places.)

