

MAT2500-01/04 19S Quiz 0. Print Name (Last, First) \_\_\_\_\_

Show all work, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation, identifying expressions by their proper symbols (introducing them if necessary), and use EQUAL SIGNS and arrows when appropriate. Always SIMPLIFY expressions. BOX final short answers. LABEL parts of problem. Keep answers EXACT (but give decimal approximations for interpretation). Indicate where technology is used and what type (Maple, GC).

a) Find the center  $C$  and radius of this sphere:  $x^2 + y^2 + z^2 + 2x - 6y + 8z + 17 = 0$ .

[Hint: check with Load Package Student Precalculus]

b) Find the distance  $s_1$  between that center and the point  $P(2, 6, -7)$ .

c) What is the distance  $s_2$  from that point  $P$  to the nearest point on the sphere?

d) What percent of the first distance  $s_1$  is the second distance  $s_2$ ?

e) Take your best shot at drawing a 2-dimensional diagram corresponding to any plane containing the center and the given point, clearly labeling the radius and the two separation distances in your diagram.

f) Is the value of d) consistent with your diagram? Explain.

► **solution**