
1. (1 pt)

What are the projections of the point $(7, 1, -8)$ on the coordinate planes?

On the xy -plane: (_____, _____, _____)

On the yz -plane: (_____, _____, _____)

On the xz -plane: (_____, _____, _____)

2. (1 pt)

Determine whether the three points $P = (-2, -5, 5)$, $Q = (-1, -3, 8)$, $R = (2, -1, 11)$ are collinear by computing the distances between pairs of points.

Distance from P to Q: _____

Distance from Q to R: _____

Distance from P to R: _____

Are the three points collinear (y/n)? _____

3. (1 pt)

Find the equation of the sphere centered at $(-1, -6, -1)$ with radius 2. Normalize your equations so that the coefficient of x^2 is 1.

_____ = 0.

Give an equation which describes the intersection of this sphere with the plane $z = 0$.

_____ = 0.

4. (1 pt)

Find the equation of the sphere if one of its diameters has endpoints $(-2, 3, -8)$ and $(-1, 5, -5)$ which has been normalized so that the coefficient of x^2 is 1.

_____ = 0.

5. (1 pt)

Write down an (in)equality which describes the solid ball of radius 2 centered at $(-8, -9, 3)$. It should have a form like $x^2 + y^2 + (z - 2)^2 - 4 \geq 0$, where you use one of the following symbols $<$, \leq , $=$, \geq , $>$

The first blank is for the algebraic expression; the second for the (in)equality.

_____ 0.

6. (1 pt)

What is the distance from the point $(2, 6, 7)$ to the xz -plane? Distance = _____

7. (1 pt)

Find an equation of the sphere that passes through the origin and whose center is $(9, 10, 4)$.

_____ = 0

Note that you must put everything on the left hand side of the equation and that we desire the coefficients of the quadratic terms to be 1.

8. (1 pt)

Find the center and radius of the sphere

$$x^2 - 12x + y^2 - 0y + z^2 + 16z = -99$$

Center: (_____, _____, _____)

Radius: _____