1 Vectors, Coordinates, Dimension

1. What is (2,4) + (9,-2)?

1. _____

2. What is (-1,5,2) - (0,-2,5)?

2. _____

3. What is (4, -5, 7) + (-3, -4)?

3. _____

4. What is the zero vector in \mathbb{R}^5 ?

4. _____

5. If v = (5, 5, -1), what is -v?

5. _____

6. Does (-6, -7) equal (-7, -6)?

- 6. _____
- 7. What does the equation x = 3 represents in \mathbb{R}^2 ? How about in \mathbb{R}^3 ?
- 7. _____
- 8. Find the equation of a line in \mathbb{R}^2 that passes through (-1,1) and (1,3). What is the slope of the line? What is the *y*-intercept?
 - 8. _____
- 9. What is the equation of the circle centered at the origin and the radius 3?
 - 9. _____
- 10. What is the equation of the circle centered at (2, -1) and the radius 4?
 - 10. _____
- 11. What is the equation of the sphere centered at (2, -1, 3) and the radius 1?
 - 11. _____

12. What is the center and the radius of the circle given by the equation $x^2 + (y+1)^2 = 16$?

12. _____

13. What is the center and the radius of the circle given by the equation $x^2-4x+y^2+6y=12$?

13. _____

14. What is the center and the radius of the sphere given by the equation $x^2 + y^2 + z^2 = x + y + z$?

14. _____

2 Inner Products

1. What is $(2,4) \cdot (9,-2)$?

1. _____

2. What is $(-1, 5) \cdot (0, -2)$?

2. _____

3. What is $(-1, 5, 2) \cdot (0, -2, 5)$?

3. _____

4. If you were to assign a number between 0 and π to the angle between (-1,5) and (0,-2), would it be less than, equal to, or greater than $\pi/2$?

4. _____

5. If you were to assign a number between 0 and π to the angle between (-1,5,2) and (0,-2,5), would it be less than, equal to, or greater than $\pi/2$?

5. _____