

Math 233 Warm Up Problems

August 28, 2009

1. Find the equation of the sphere in $\mathbb{R}^3$ with radius π and center at $(\sqrt{2}, -7, \sqrt{\pi})$.
2. Find the unit vector in the direction of the given vector

$$V = (4, -2, 7) \quad U =$$

Lecture Problems

3. Let $A = (12, -1, 5)$ and $B = (-1, 2, 1)$.
 - (a) Find the component of A along B .
 - (b) Find the vector projection of A along B .
 - (c) Find the scalar projection of A along B .
 - (d) Find the orthogonal projection of A along B .
4. Let $A = (8, 1, -2)$ and $B = (1, 4, -3)$.
 - (a) Find the component of A along B .
 - (b) Find the vector projection of A along B .
 - (c) Find the scalar projection of A along B .
 - (d) Find the orthogonal projection of A along B .
5. Find the angle (in radians) between the two vectors in $\mathbb{R}^4$:

$$v_1 = (1, -2, -3, 1), \quad v_2 = (4, 5, -1, 2)$$