

Homework questions for section 13.1, 13.2

Math 114, Spring 2008

1. The equation

$$x^2 + y^2 + z^2 - 3x + 4z = 0$$

represents a sphere. What is the radius of this sphere?

- A) 1 B) $\frac{4}{3}$ C) 2 D) $\frac{5}{2}$ E) 3 F) $\frac{10}{3}$

2. Find an equation for the collection of points (x, y, z) that are equidistant from $A(1, 0, 3)$ and $B(2, -1, 6)$.

A) $2x - 2y + 6z = 31$

B) $x - y + 3z = 15$

C) $3x - y + 9z = 0$

D) $3x - y + 9z = 11$

E) $x + 3z = 2x - y + 6z$

F) $3x^2 - y^2 + 9z^2 = 11$

3. Let $ABCD$ be a parallelogram, and denote $\mathbf{a} = \vec{AB}$, $\mathbf{b} = \vec{AD}$. If P is the point of intersection of the diagonals AC and BD , which of the following represents the vector \vec{BP} ?

A) $\mathbf{a} + \mathbf{b}$

B) $\mathbf{b} - \mathbf{a}$

C) $\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$

D) $\frac{1}{2}\mathbf{b} - \frac{1}{2}\mathbf{a}$

E) $\frac{1}{2}(\mathbf{a} + \mathbf{b}) + \frac{1}{2}(\mathbf{b} - \mathbf{a})$

F) $\frac{1}{2}(\mathbf{a} + \mathbf{b}) + \frac{1}{2}(\mathbf{a} - \mathbf{b})$