Watch. Practice. Understand. | Lesson 352

Mutivariable Calculus Cartisian Corrdinates in 3d space

Watch the matching video: https://www.youtube.com/watch?v=_BrByuWR9Pw

Practice focus: Three-dimensional coordinates

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Find the distance between (1,2,3) and (4,6,3).

02 Find the midpoint of (0,2,4) and (6,-2,8).

03 Write the sphere with center (1,-2,3) and radius 4.

04 For (3,-4,5), find distances to the xy-plane and to the z-axis.

Worked answers | Lesson 352

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Practice focus: Three-dimensional coordinates

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01 Find the distance between (1,2,3) and (4,6,3).

$\sqrt{(3^2 + 4^2 + 0^2)} = 5$.

02 Find the midpoint of (0,2,4) and (6,-2,8).

Average coordinates: (3,0,6).

03 Write the sphere with center (1,-2,3) and radius 4.

$(x - 1)^2 + (y + 2)^2 + (z - 3)^2 = 16$.

04 For (3,-4,5), find distances to the xy-plane and to the z-axis.

To xy-plane: $|z| = 5$. To z-axis: $\sqrt{(x^2 + y^2)} = \sqrt{25} = 5$.