

Alignment of a Solar Panel

A Problem on Dot and Cross Products

Math 51, Winter 2005

A solar panel is supported on a vertical rod whose top is at point $(0, 0, 1)$. Throughout the day, the panel swivels about that point, so that it always faces the sun. At one point in the late afternoon, the solar panel also contains points $(0, 1, 2)$ and $(1, -4, 0)$.

1. Find a vector that points from the solar panel toward the sun.

2. What is the angle between the solar panel and its vertical support?

(There are hints on the back of the page, but don't look at them yet.)

Hint for Problem 1. Find a normal vector to the solar panel. How can you tell if it points toward the sun or away from the sun?

Hint for Problem 2. To find the angle between the support and the panel, first find the angle between the support and the normal vector.