Warm Up

What is the derivative of the vector valued function, \( \vec{r}(t) = \langle -3t^2, \sin t \cos t, -\ln(t) \rangle \)?

What is the integral of the vector valued function \( \vec{r}(t) = \langle \sin t - 1, t^4, 0 \rangle \) from \( t=0 \) to \( t=\pi \)?

Group Problems

Find a vector valued function for a line through the points \( P_1(4,5,6) \) and \( P_2(-3,7,5) \).

Find a vector valued function for the helix shown. (Look at the coordinates along the axes. They are hard to see!)

What is the velocity vector of a particle at time \( t=3 \) of a particle traveling along a path defined by the vector valued function \( \vec{r}(t) = \langle \cos t \pi + 2, -\cos t \pi, -t \rangle \)?