

Review Worksheet

F, Apr. 19

1. A frame of wire in the shape of a regular tetrahedron is placed on a level surface, and a plumb is hung from its top vertex. What angle does the plumb line make with each of the four faces of the tetrahedron?
2. Consider the space curve $\mathbf{r}(t) = \langle \ln t, 2t, 3t^2 \rangle$. When is the binormal vector of this curve parallel to the line $\mathbf{r}(t) = \langle -6t + 2, 6t - 1, -t \rangle$?
3. Find the minimum distance between the curve $\mathbf{r}(t) = \langle e^t, e^{-t} \rangle$ and the origin.
4. Using a tangent plane approximation, estimate $\sqrt{1.03} \cos(3.15)$.