

Name _____

Homework 19
Section 17.1 & 17.2

1. (3ea) Determine a parameterization for each of the following.

(a) The line through the points $(4, -1, -3)$ and $(1, 2, 4)$.

(b) The circle of radius 6, parallel to the xy -plane, centered at $(-2, 5, 3)$.

(c) The line segment from $(-5, 3, 2)$ to $(13, 1, 10)$.

2. (5) Determine a parameterization for the circle, traversed in the clockwise direction, which is inscribed in the square with corners at $(3, 1)$, $(7, 1)$, $(7, 5)$, and $(3, 5)$.

3. (1,1,2,2) Tommy is descending from the top of a spiral staircase. With x , y , and z in feet and the origin at the center of the base of the staircase, his position t minutes after he starts is given by the parameterization $\vec{r}(t) = (8 \cos t)\vec{i} + (8 \sin t)\vec{j} + (75 - 5t)\vec{k}$.

(a) How tall is the staircase?

(b) How long does it take him to reach the bottom?

(c) What is his speed at time t ?

(d) What is his acceleration at time t ?