Name _____

Homework 6
Sections 17.1 & 17.2

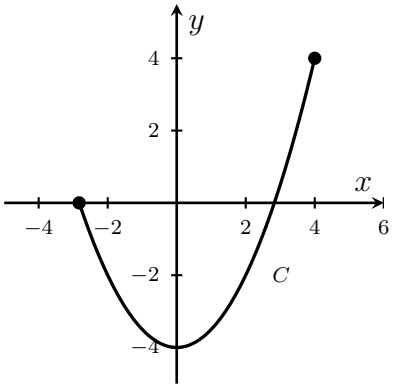
1. (15) Determine a parameterization for each of the following.

   (a) The line through the points $(4, -2, -1)$ and $(1, 6, 9)$.

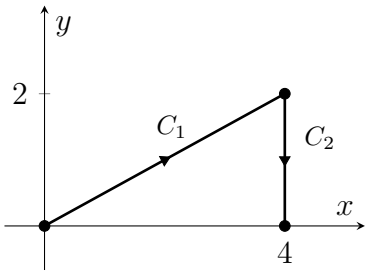
   (b) The circle of radius 4, parallel to the xz-plane, centered at $(5, 3, -1)$.

   (c) The line segment from $(-5, 2, 3)$ to $(9, 10, -4)$.

   (d) The portion of the graph of $y = \frac{1}{2}x^2 - 4$ shown below.



(e) The segment C_1 shown to the right.



(f) The segment C_2 shown to the right.

2. (5) A curve is given by the parameterization

$$\vec{R}(t) = \left(t^3 - 5t^2 + 9t + 1\right)\vec{i} + (13 - 6t)\,\vec{j} + \left(t^2 - t - 3\right)\vec{k}.$$

Determine a parameterization for the line which is tangent to the curve at $t = 2$.