1. (15) Determine a parameterization for each of the following.
   (a) The line through the points \((4, -2, -1)\) and \((1, 7, 5)\).

   (b) The circle of radius 9, parallel to the \(xz\)-plane, centered at \((5, 4, -3)\).

   (c) The line segment from \((-5, 2, 3)\) to \((9, 7, -4)\).

   (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

$$\vec{R}(t) = (t^3 - 3t^2 + 2t + 4) \hat{i} + (13 - 6t) \hat{j} + (t^2 - t - 3) \hat{k}.$$ 

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