For the plane curve described by the vector–valued function 
\[ \mathbf{r}(t) = \langle t + 2, -2t^2 + t + 1 \rangle, \]
a. Sketch the curve over the parameter interval \(-2 \leq t \leq 2\).
b. Compute \( \mathbf{r}'(t) \).
c. On the sketch that you drew in part a, sketch the position vector \( \mathbf{r}(-1) \).
d. On the sketch that you drew in part a, sketch the tangent vector \( \mathbf{r}'(-1) \)

**Solution:** The sketch of the curve is shown below. It can be obtained by making a \((t, x, y)\) table and/or by using a graphing calculator.

We easily see that 
\[ \mathbf{r}'(t) = \langle 1, -4t + 1 \rangle \]
and that 
\[ \mathbf{r}(-1) = \langle 1, -2 \rangle \quad \text{and} \quad \mathbf{r}'(-1) = \langle 1, 5 \rangle. \]
These vectors are shown on the sketch below.