Name:_____

Math 2030, Winter 2016, Quiz 3a
29 January 2016
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No calculators needed or allowed.

Let $\vec{r}(t) = \left(\dfrac{2t}{t^2 + 2}, \ \dfrac{2}{t^2 + 2}, \ \dfrac{t^2}{t^2 + 2} \right).$

1. Find $\lim\limits_{t \to \pm\infty} \vec{r}(t)$.

2. Show that $\vec{r}(t)$ lies in the plane $y + z = 1$.

3. Find $\vec{r}\,'(t)$.

4. Find the maximum and minimum values of $x(t) = \vec{r}(t) \cdot \vec{i}$.