NAME: MATH 151 Section: September 12, 2013

QUIZ 2

1. **a)** (3 points) Find the equation of the line passing through $(1, 1)$ and perpendicular to $-\mathbf{i} + 2\mathbf{j}$.

2. (3 points) Find the vertical and horizontal asymptotes of $y = \dfrac{x^2 - 1}{x^2 + 2x + 1}$.

3. (4 points) Let

$$f(x) = \begin{cases} 0 & \text{if } x < 0 \\ x^2 & \text{if } 0 \leq x < 1 \\ 3 & \text{if } x \geq 1 \end{cases}$$

Calculate $\lim_{x \to 0} f(x)$ if it exists, or show that it does not exist. Do the same for $\lim_{x \to 1} f(x)$.