First Name _____ Last Name _____ Date ___ – ___ – ___ Period ____ Score ____

Targets.

- to calculate the limit of a rational function by simplifying the expression algebraically.

Do Now.

1. Prove $x^2 - y^2 = (x - y)(x + y)$.

2. Prove $(x \pm y)^2 = x^2 \pm 2xy + y^2$.

Concepts.

- The *limit* of a function at a point (in loose term)

- Instantaneous velocity

Problems.

1. Find $\lim_{x \to 2} \dfrac{x^2 - 2^2}{x - 2}$.

2. Find $\lim_{x \to 3} \dfrac{x^3 - 3^3}{x - 3}$.

3. Find $\lim_{x \to x_0} \dfrac{x^4 - x_0^4}{x - x_0}$.

Exit Ticket. Suppose the position of an object over time is given by $p(t) = t^2$. Find the instantaneous velocity of the object at $t = 2$.