Name:_____ Date:_____

PCH: Reducible Rational Functions Ms. Loughran

Undefined: $\frac{a}{b}$ where $b = 0$ and $a \neq 0$

Indeterminate: $\frac{a}{b}$ where $b = 0$ and $a = 0$

A rational function that is indeterminate for a value of x is *reducible*. A "hole" occurs at the value(s) of x which make the given function indeterminate and the reduced fraction defined.

Is the graph of $y = \frac{x}{x}$ the same as the graph of $y = 1$?

If a function is reducible use the reduced function when finding the intercepts.

Sketch the graph of each of the following. State the domain, range, and any intercepts.

1. $y = \frac{x^2 - 4}{x + 2}$

2. $y = \dfrac{x^2 - 5x + 6}{3 - x}$

3. $y = \dfrac{(x+1)(x+3)(x-3)(x-2)}{(x+1)(x-2)}$

4. $y = \dfrac{x^3 - 1}{x - 1}$

Practice

Sketch the graph of each of the following. State the domain, range, and any intercepts.

1. $y = \dfrac{x^2 - 9}{x + 3}$

2. $y = \dfrac{x^2 - x - 6}{x - 3}$

3. $y = \dfrac{x^2 - 16}{x + 4}$

4. $y = \dfrac{1 + x - 2x^2}{x - 1}$

5. $y = \dfrac{x^3 - 8}{x - 2}$

6. $y = \dfrac{x^3 - 2x^2 - 3x + 6}{2 - x}$