

Name: _____

PC: Reducible Functions

Date: _____

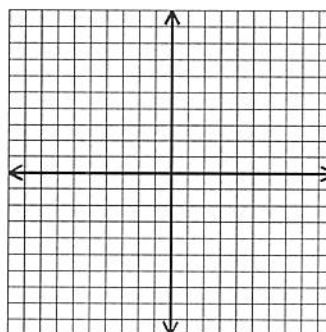
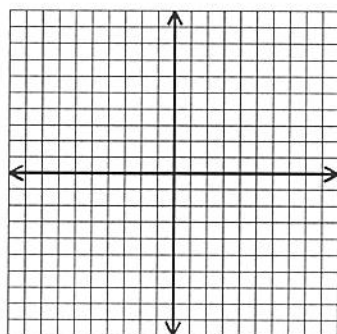
Ms. Loughran

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.

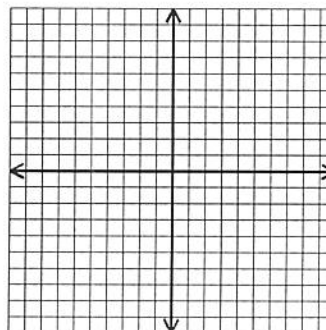
Is the graph of $y = \frac{x}{x}$ the same as the graph of $y = 1$?



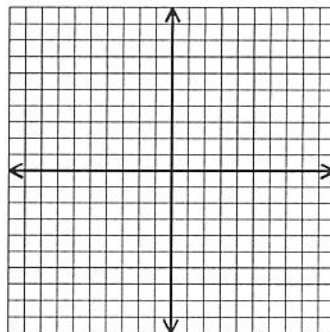
If a function is **reducible** use the **reduced** function when finding the intercepts.

Graph each of the following. State the domain, range, and any intercepts and asymptotes.

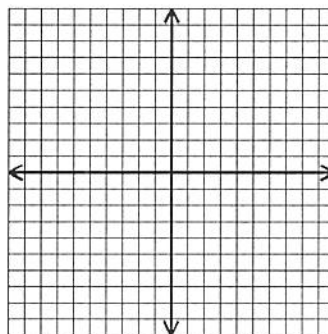
1. $y = \frac{x^2 - 4}{x + 2}$



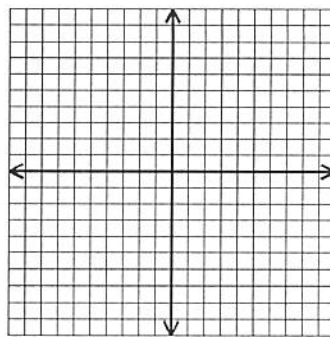
2. $y = \frac{3-x}{x^2-5x+6}$



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



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



Practice

Graph each of the following. State the domain, range, and any intercepts and asymptotes.

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

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

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

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

$$5. \quad y = \frac{x - 1}{x^2 + x - 2}$$

$$6. \quad y = \frac{1 + x - 2x^2}{x - 1}$$

$$7. \quad y = \frac{x^3 - 8}{x - 2}$$

$$8. \quad y = \frac{x - 1}{x^2 - 1}$$

$$9. \quad y = \frac{x^3 - 2x^2 - 3x + 6}{2 - x}$$