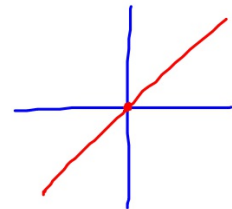# *Variation*

In all formulas, "k" is the CONSTANT of variation

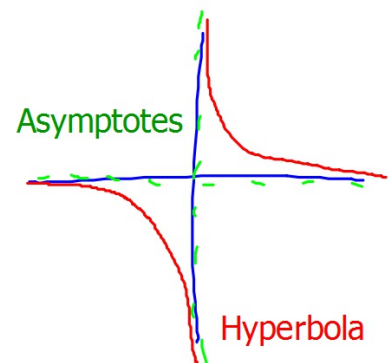**DIRECT:** x and y vary <u>directly</u>
  Formula: y = kx

INVERSE: x and y vary <u>inversely</u>
  Formulas: y = k/x   or   xy = k

Asymptotes

Hyperbola

JOINT: x and y vary both <u>directly</u> AND <u>inversely</u>
  Formula: y = kxz

Solving Variation Problems

Suppose y varies directly as x and $y = 35$ when $x = 5$. Find y when $x = 7$.

Step 1: Identify the type of variation (the problem will always tell you) so that you know which formula to use.

We are told y varies **directly**, so we use y = kx.

Step 2: Plug in the given variable set and solve for "k"

Plugging in x and y gives us "35 = k · 5", so k = 7.

Step 3: Rewrite formula with second given vaiable and solved "k" and find missing variable.

Rewriting, we have "y = 7 · 7", so y = 49.