3.6 - A Summary of Curve Sketching

¿¿¿¿¿ Remember ?????

x-intercepts	Vertical Asymptotes	Relative Extrema
y-intercepts	Horizontal Asymptotes	Concavity
Symmetry	Slant Asymptotes	Points of Inflection
Domain	Continuity	Infinite Limits at Infinity
Range	Differentiability	

All of these features are important to every graph!

When graphing - you cannot show the *ENTIRE GRAPH*

You have to decide *which* part of the graph to show

Guidelines for Analyzing the Graph of a Function

1. Determine the DOMAIN & RANGE of the function
2. Determine the intercepts, asymptotes and symmetry of the graph

} **Precal**

3. Locate the x-values for which f '(x) and f "(x) are zero or DNE
   Critical Numbers & Points of Interest

} **Calculus**

Example 1 - Sketching the graph of a RATIONAL FUNCTION

Analyze & Sketch the graph of

$$f(x) = \frac{2(x^2 - 9)}{x^2 - 4}$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____

$f'(x) =$

$f''(x) =$

Example 2 - Sketching the graph of a RATIONAL FUNCTION

Analyze & Sketch the graph of

$$f(x) = \frac{x^2 - 2x + 4}{x - 2}$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____

$f'(x) =$

$f''(x) =$

Example 3 - Sketching the graph of a RADICAL FUNCTION

Analyze & Sketch the graph of

$$f(x) = \frac{x}{\sqrt{x^2+2}}$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____

Example 4 - Sketching the graph of a RADICAL FUNCTION

Analyze & Sketch the graph of

$$f(x) = 2x^{\frac{5}{3}} - 5x^{\frac{4}{3}}$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____

Example 5 - Sketching the graph of a POLYNOMIAL FUNCTION

Analyze & Sketch the graph of

$$f(x) = x^4 - 12x^3 + 48x^2 - 64x$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____

Example 5 - Sketching the graph of a TRIG FUNCTION

Analyze & Sketch the graph of

$$f(x) = \frac{\cos x}{1 + \sin x}$$

x-intercepts:_____

y-intercept:_____

VA :_____

HA :_____

Domain:_____

Range:_____

Symmetry:_____