4.4 Curve sketching

Graph with Calculus:

Step 1. Determine the domain of f.

Step 2. Determine all asymptotes of f.

Step 3. Find f', to determine the critical points, increasing/decreasing interval and local extrema.

Step 4. Find f'', to determine the inflection points and concavity.

Step 5. Sketch the graph of f.

f'	$+$ ↗	$+$ ↗	$-$ ↘	$-$ ↘
f''	$+$ ∪	$-$ ∩	$+$ ∪	$-$ ∩
f	↗	↗	↘	↘

Ex 1: Sketch the graph of $f(x) = x^3 - 3x + 2$.

Ex 2: Sketch the graph of $f(x) = \dfrac{2(x^2 - 9)}{x^2 - 4}$.

Ex 3: Analyze the graph of $f(x) = e^{-x^2}$.